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THE EVOLUTION OF A SKYSCRAPER.

THE architectural criticism of a layman is very apt to be warped and vitiated by his failure to make allowances for the difficulties under which the designer labors. In fact, it is almost sure to be defective on this account. To be sure, the layman may say that he does not get very much light in this respect from professional criticism, and that the architects, who ought to know about the difficulties from their experience of the same or the like, do not as a rule make the allowances when they are indulging in private in frank and free remarks about the performances of one another. It is only in the case of a purely monumental building, where the very site is chosen by the architect and he is unlimited in cost, that he does not stand in need of allowances, but is privileged "to set his own free thought before us." And of course such an opportunity as that practically never occurs. The architect's solutions of the ordinary problems of his profession are and must be "modified at every turn by circumstance and concession." Especially, one may say, is the architect of a skyscraper in need of sympathy, having to do a building which must be grimly and strictly utilitarian, to the extent of utilizing every cubic foot of habitable space, by the very same considerations as those which necessitate that it shall be monumental in its magnitude or at least in its altitude and by its necessarily aggressive conspicuousness. What the steel-framed construction tends to become, what is the practical basis of such architecture as can be evolved from it, may be seen as one watches the skeleton arising undraped, or, still better, as one looks at the back or side of a towering structure, with its mere veneer of brickwork, the back or side unregarded by the architect, who concentrates his architecture on the street front that is meant to be seen, and leaves the architecture elsewhere to take care of itself, as

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it of course fails to do. One sees that the ultimate solution of the architecture of the skyscraper must be the recognition that it is a skeleton, and the expression of its articulations, with the protective envelope reduced to its lowest terms and simplest expression. In other words, the skyscraper is a frame building and not a concretion of masonry. There are almost no precedents applicable to the expression of such a structure in the whole of architectural history. The nearest approach that is furnished to a precedent is the half-timbered work of Gothic and Renaissance times in western Europe. For the most part, the historical examples are too modest in scale and too simple in composition to do more than furnish hints for the treatment of detail. But some of the loftier of the German half-timbered erections, the many-storied and gabled fronts of Hildesheim or Brunswick, for example, furnish at least suggestion for the architect of the modern "half-steeled" erections. Nobody can look at one of these and at the towering steel skeletons not yet begun to be draped, without perceiving that the old house fronts come much nearer to being an expression of the most modern of constructions than most of the fronts that are applied to these. But in fact, what the architects of skyscrapers are called upon to do is to create a new architecture, an architecture which in its problems has immensely more affinities with modern engineering than with historical architecture. And this task is sprung upon them at a time when, more than at any previous time in human history, architectural education has to do exclusively with reproduction and imitation, and less than at any with invention. Honor to the very few who have tackled this gigantic task, and every allowance for their shortcomings in the fulfillment of it! Every allowance also for the far more numerous architects who have declined it, and have rested in compromises and conventions, or even have contented themselves with concealing the new construction behind such a cento of historical architecture as could be mechanically adjusted to it, without the pretence of architecturally expressing it! "Comprendre tout, c'est à pardonner tout." And one must see and catch the design for a skyscraper in the making really to "comprehend" the peculiar difficulties it involves.

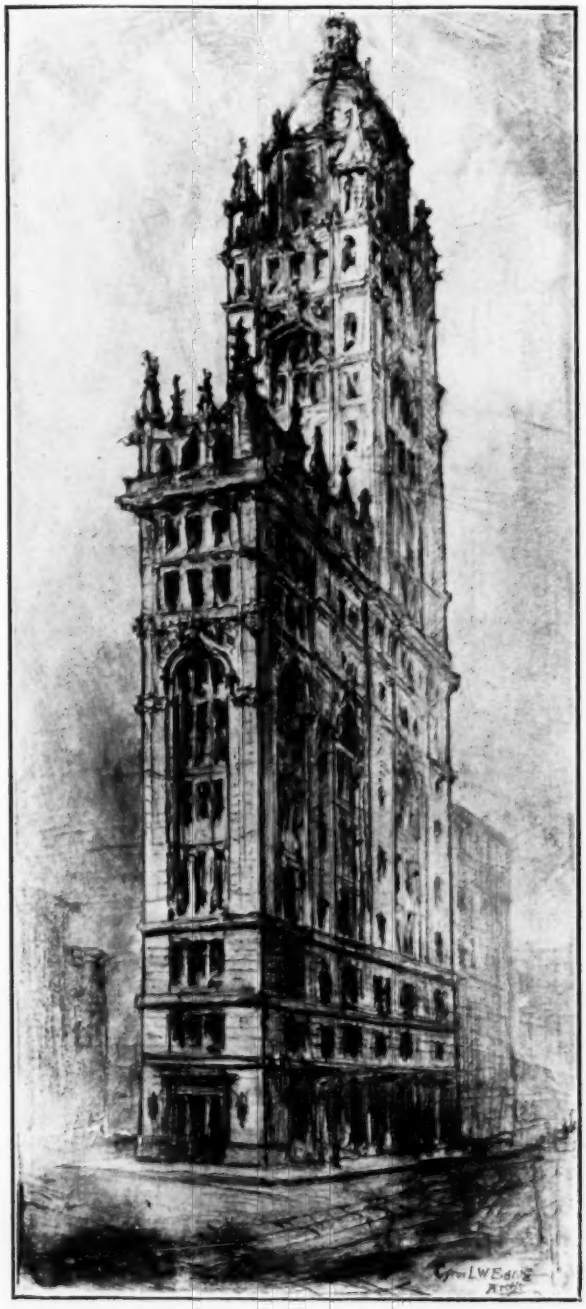
The present writer has had the advantage of this experience in respect to Mr. Eidlitz's design for an unmistakeable skyscraper, the new building for the New York Times, the tallest skyscraper but one, it turns out, on Manhattan Island, if measured from the ground, and possibly quite the tallest if measured from the beginning of the structure, fifty-five feet below the surface. This very unusual depth of excavation was required on account of the double occupation of the substructure by the tracks of the rapid transit

subway, which swings through the basement twenty-two feet below ground, requiring for its own structure a head room of ten feet, which becomes elsewhere the first sub-basement, and by the room required for the presses and other mechanical departments of a modern newspaper, which had to be accommodated in a second sub-basement. It is evident how the necessity of these unusual accommodations complicated the design in the mechanical, in the engineering sense.

But they did not sensibly complicate it at all in the artistic, in the architectural sense. In that sense the problem had its unusual, its well-nigh unique advantage. It had also its corresponding disadvantages, these being, in truth, the sequels and corollaries of its advantages. "The constitution of our nature is such that we buy our blessings at a price." The advantage of the site for the new Times building is that it is one of half a dozen really available sites for tall buildings left in New York—one of the intersections, that is to say, of Broadway with an avenue. Those really astonishingly incompetent citizens, the street commissioners of 1807, who "regularly laid out" New York, without doubt regarded the interruption of the rectangularity, so dear to their narrow souls, which was occasioned by the fact that the property holdings of the diagonal Broadway, or Bloomingdale Road, were too important to be disregarded, as the chief drawback to their scheme of a "model city" from the New York point of view of 1807, of men who had never seen a real city in their lives, even as cities went then, much less had any data on which to "posit" an ideal city. Doubtless they were most well-meaning burghers, but the extent of their ignorance of city planning was abysmal. As a matter of hard fact, to which they pretended to pay attention, the only salvation of their scheme, and that a very incomplete salvation, was the fact that Broadway was already too important to be disregarded, that they really had to make its intersections exceptions to the rule of rectangularity. Mr. Muirhead, in his delightful book, "America, the Land of Contrasts," says that the plan of Washington is a "wheel laid upon a gridiron." That is vivid. But the plan of New York is a gridiron modified only by "force majeure." What a pity that the force was not more "majeure," that there should not have been half a dozen thoroughfares as important as Broadway to hold up those stupid devotees of the unmodified gridiron. As a matter of fact, their dispositions have resulted in this, that the only exceptions in the part that they "regularly laid out" to their Procrustean rule, are these intersections with Broadway. Further down, in the region which grew as it liked and was built as it was wanted, the exceptions are more numerous. When one of them "fell among" an architect, as when the municipality wisely and fortunately chose

the late F. C. Withers to fill the irregular polygon at Sixth Avenue and Tenth Street with that picturesque huddle of "Jefferson Market," the result was charming, and made Manhattan to that extent a more eligible place of residence. It is true I cannot recall another instance of a sympathetic treatment of one of these irregular spaces. The Herald Building, which occupies one of the intersections of Broadway, waives picturesque irregularity altogether and pretends that its site is rectangular. That pretence would not have been possible if it had occupied the southern instead of one of the northern trapezoids accruing from the intersection.

The trapezoids, be they northerly or southerly, offer the advantage of a detached site of fair if not of ample area, upon which a building can be set so as to be seen on all sides, and to be seen "all at once," so to speak, enabling the designer, according to his ability, to produce the building "in the round," and not as elsewhere a mere front or at most two fronts at right angles to each other. This is already a considerable architectural opportunity. The drawbacks of it are inherent in its existence, and these are the irregularity of the resulting solid, and the difficulty of securing either formal symmetry on either side of any axis which can be run, or, on the other hand, of securing such a general balance, such a subordination and such a culmination as shall make the spectator forgive and even acclaim the want of formal symmetry. Of course this task becomes more difficult to meet in proportion as the utilitarian demand is more urgent for the utilization of every cubic foot included within the limited periphery of the building. It becomes impossible to meet when it goes the length, as in the "Flatiron," which absolutely refuses to be known to fame under any more formal designation, of a demand that the building shall be built "to the limit" in every dimension. The first thought of the architect of the Times building, his architectural datum, was that this treatment should not be repeated in it, and that the lot should not be built upon at all points to the same height. He had the additional advantage that the "institution" he was to house, the newspaper, might be regarded as a monumental superposition on a purely commercial structure, and not only enabled but demanded a differentiation. At this stage the project contemplated only about two-thirds in length of the plot subsequently acquired, the "Pabst Hotel" still occupying the broader end of the trapezoid, of which the base was not much more than half that of the "Flatiron." As some compensation, this site was a trapezoid, while that at Twenty-third Street was a triangle. A truncation of twenty feet effected this conversion and enabled something to be done with its face, which in the "Flatiron" is not a face, but only an edge, an "arris." With these data the designer



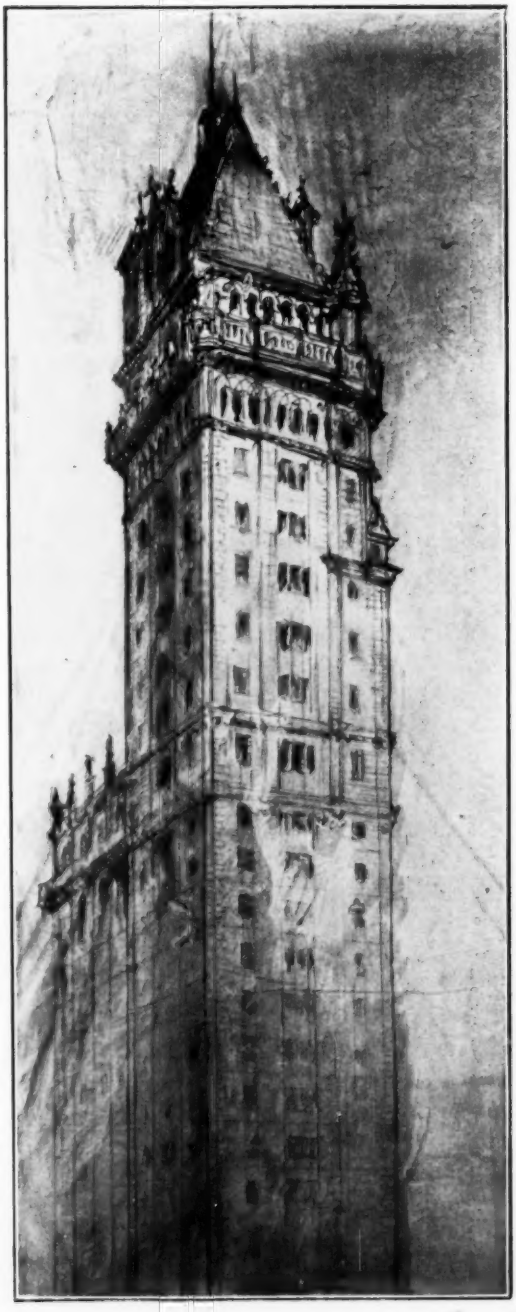
PRELIMINARY SKETCH FOR THE NEW YORK TIMES BUILDING.
Broadway and 42d Street, New York City. Cyrus L. W. Eidlitz, Architect.

produced his first sketch, which I think will be admitted to be a particularly picturesque and attractive project. While he did not see his way to treating this edifice as a frame building and assumed the convention, which is in fact the current and agreed fiction, that it was a building of masonry, with all that that implies, such as setting it on an apparently massive basement of masonry, yet he did see his way to attenuating the piers of the superstructure into buttresses, with a result that at once suggested a Gothic treatment, and gave the work more the aspect of a cathedral than of any other architectural type. On a trapezoid of which the parallel sides were respectively some twenty feet and some forty-five, to inscribe a building for the most profitable rental, with the mechanical departments of a newspaper housed underground, excepting the composing room, which was to occupy the upper floor of the entire area, and to superpose upon this, occupying the base of the trapezoid and rather more than one-third of its length, a tower, which should house the editorial departments, and the outline of which should dissemble the irregularity of the plot, so that the tower should appear virtually symmetrical. This was the initial problem presented to the architect, of which the solution was his first sketch, produced in a few hours. The striking picturesqueness of the result was attained not only without doing violence to any of the conditions, but by a strict adherence to them. They were, in fact, the basis of the design. The triple division of the long side proceeded naturally and almost inevitably from the setting off of the most suitable and available space for the base of the tower, and this space became the unit of a division, the span of a "bay." The treatment of the truncation as a single bay thereupon distinctly "imposed" itself and the arching of the large openings that constitute and denote the bay and emphasize the division, could happily be introduced without at all compromising the practicability of the design as that of an office building erected for the most profitable return. For the slight darkening of the stories upon which the arches open does not entail the least inconvenience in a structure so abundantly illuminated, by reason of its detachment. The triple division, vertically, followed, or rather, attended the triple division laterally. Always assuming that the walls are real walls which carry themselves, this vertical division is logical as well as harmonious and artistic, a solid basement of three stories, a middle division of six, itself subdivided into four arched stories and two lintelled, with very good effect when taken in connection with what is below and what above, and an attic of a single story bristling with Gothic pinnacles. Then the crowning member of which the pinnacled angle piers help to dissemble the irregularity of the plan, a result to which the octagonal cupola still more powerfully contributes. Altogether a picturesque

THE NEW YORK TIMES BUILDING—THE FINAL DESIGN.
Broadway and 42d Street, New York City. Cyrus L. W. Eidlitz, Architect.

and unique skyscraper, distinguished by the lack of the gaunt attenuation which almost inevitably belongs to the extreme commercial skyscraper.

This germinal idea of the building remains and is traceable in the finished design. It was in endeavoring to realize the idea that the designer's troubles began. In the first place, came the requirement that the substructure, the office building for rental, should be raised to the highest rent paying power, and this limit, what between the probable demand and the difficulties of construction, particularly of wind bracing, on so narrow a base and with so enormous an altitude (430 feet from the foundations, as it has been settled) was set at fifteen stories, exclusive of the attic, which is allotted to the composing room. Doubtless the original limitation to ten stories for the building covering the entire plot was more conducive to graceful and harmonious architecture. The vertical extension eliminated at once the arched openings which were the chief feature of the middle division in the original sketch. The elongation required to make them as conspicuous a feature in a sixteen-story building as they had been in one of ten would have been quite intolerable. There was nothing for it (at least after much experimentation there appeared to be nothing) but to relegate the arcade to the top of the structure, and to conform the span of its bay to the division enforced below by a combined consideration of the exigencies of the structure and the convenience of tenants. With the lengthening of the building made possible by the acquisition of the base of the trapezoid, there accrue four bays in the main structure as against two, with, of course, a corresponding diminution of the effect of each as a feature of the middle wall. For the same reason, the great arch of the northern narrow front became impossible. The only thing to do was to revert to the conventional treatment of the middle, the shaft, laying no stress upon its openings but simply coupling them between the strips, which in the Italian Romanesque would have been called the "lisenes," which correspond to and indicate the steel framing of the structure. On the northern face, which it was so desirable to keep as solid as possible, the recourse, when the grandiose feature of the single tall arch became impracticable, was to a single plain opening in each story, flanked by the broadest and plainest piers possible in the dimension. Above, in the arcade, by a projection over each supporting "lisene" springing from a corbelled column, and by a subsequent recession from the new plane thus gained, it became possible to give the crowning arcade an effective depth of jamb, and to emphasize this by modeling. The general effect thus perforce becomes, after a start from so different a motive, that which so many skyscrapers exemplify, and which is so success-



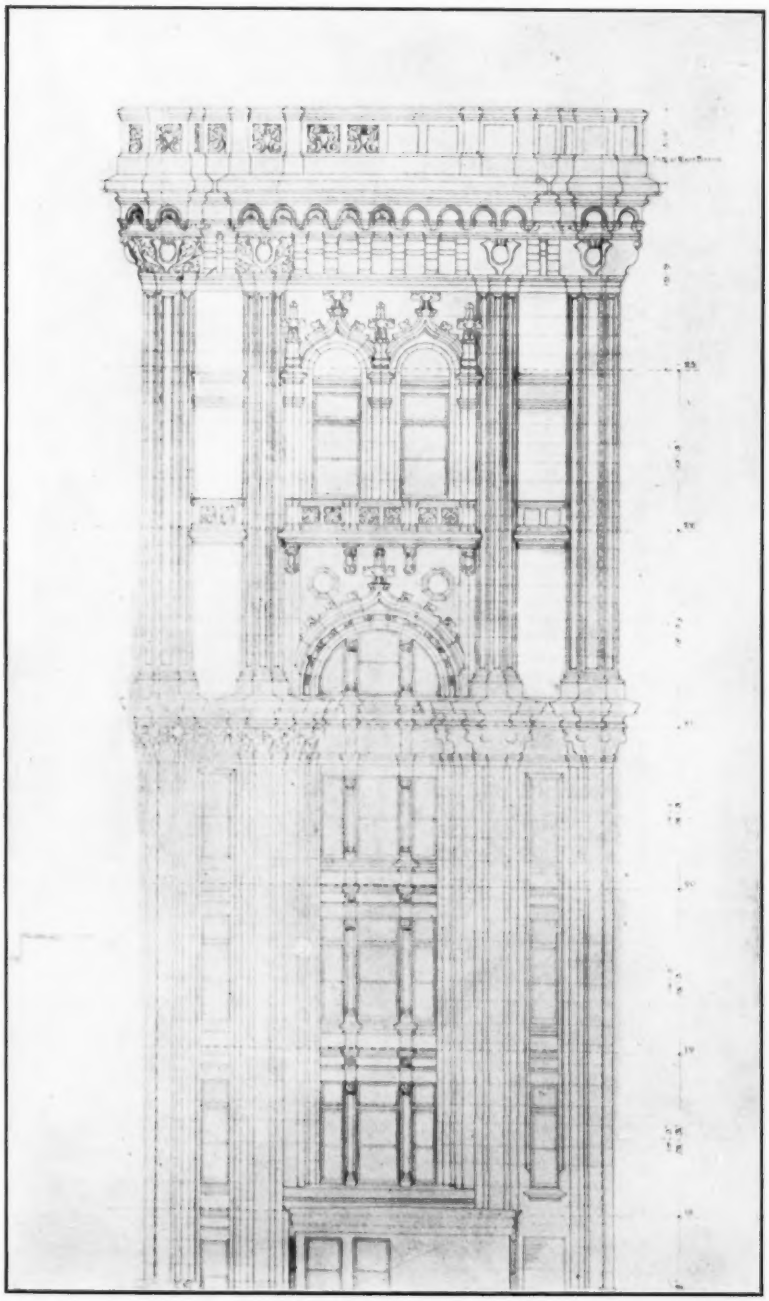
THE PRELIMINARY SKETCH OF THE TOWER OF THE NEW YORK TIMES BUILDING.

Broadway and 42d Street, New York City. Cyrus L. W. Eidlitz, Architect.

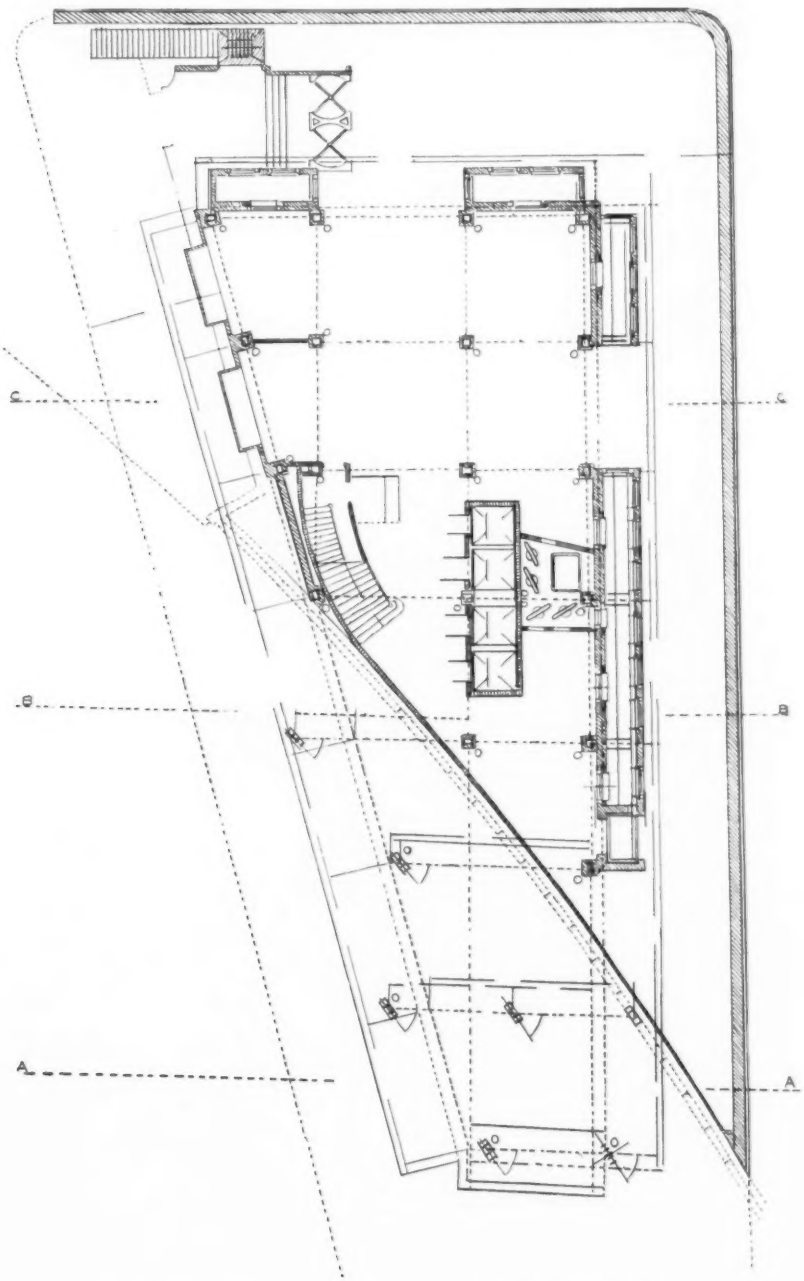
fully done in the Broadway Chambers as to make that building in that respect as in some others typical and apparently prototypical. Without the tower, indeed, the Times building would be simply a highly respectable skyscraper of that type, with the addition, which commends itself as an improvement, of the attic which was fortunately indicated and required by the peculiar purpose of the building, and the necessity of providing a tall story, of the maximum area within the site, for the printers.

But all this is comparatively easy and obvious, although, like all successful solutions, it is much more obvious after it has been done than before. The tower was the crux of the whole problem. The first notion naturally was to use this feature so as to dissemble the irregularity of the site, and to do this by reducing it to a parallelopiped, with its central axis the true, or rather the apparent axis of the building, emphasizing this by a steep roof, of which the ridge should denote the axis. The cupola was early abandoned as impracticable for a commercial building. I wish I could show you some of the interminable series of studies that were undertaken to center and to symmetrize this tower, by cutting away, for example, one side of the trapezoid and trimming it down to a rectangle, reducing the pruning to a minimum by restoring, in the form of bays, some of the space that had been retrenched. I am permitted to show one, exhibiting the effect of the Southern front, crowned with a steeply hooded roof, and indicating at the right the excisions that had to be made on the Broadway front on behalf of axiality and symmetry. It is plain how this complicates and difficilitates the construction. This practical difficulty involves an architectural consideration. For to comply with it would be to confuse the spectator's perception that this is in fact a frame building of which the uprights are continuous, and must be, from foundation to roof, and would imply, even to the eye, some awkward structural makeshift, and in all these experiments at fitting a symmetrical top to an unsymmetrical substructure, it was found that, to the eye, there was at least one "dead point." While the crowning feature might really come in properly and really crown the edifice from half a dozen points of view, there was sure to be one residuary and overlooked point of view from which it would look lopsided and askew.

Revolted by the results of these experiments, the architect at last threw overboard the whole scheme of which his sketches were notations, and determined to "build to the limit" and let the result take care of itself, or rather to see that it should take care of itself. It was at this juncture that the campanile of Giotto presented itself to him as a model. That famous tower had already been taken for that purpose in New York, in the tower of the Produce Exchange.

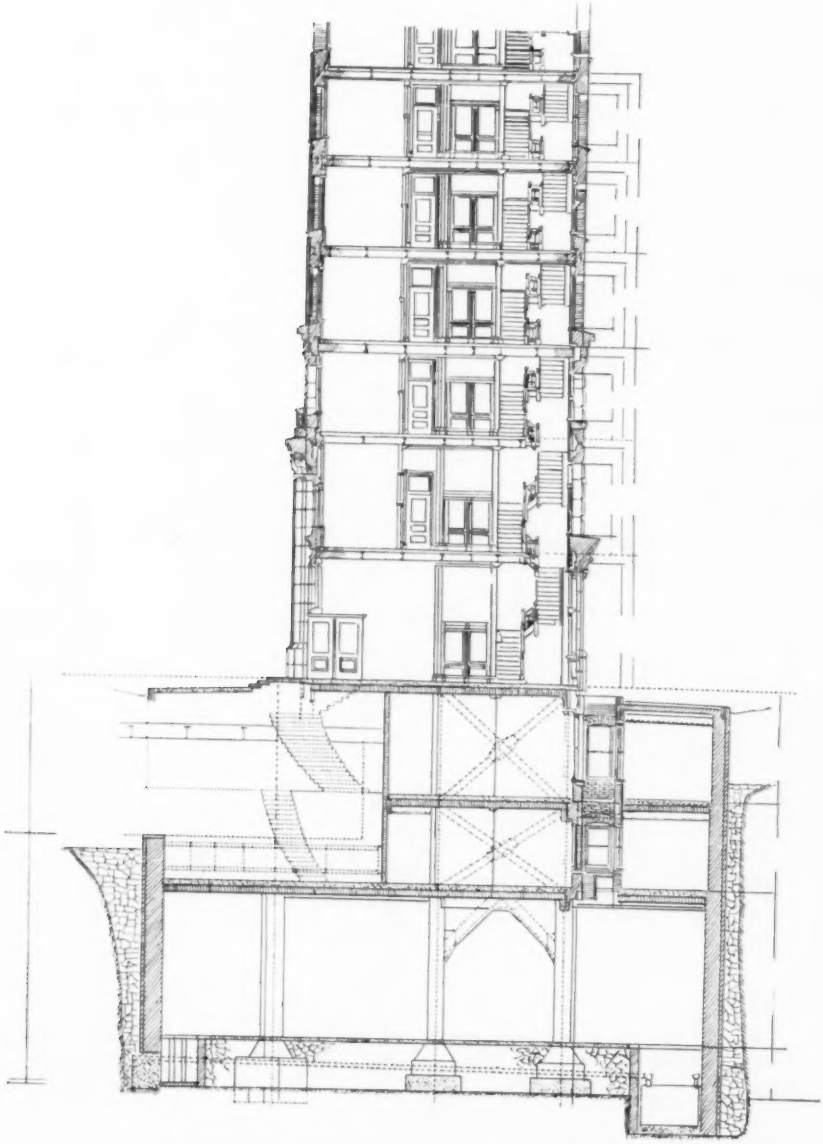


FAÇADE OF THE TOWER OF THE NEW YORK TIMES BUILDING.
Broadway and 42d Street, New York City. Cyrus L. W. Eidlitz, Architect.



FLOOR PLAN OF THE NEW YORK TIMES BUILDING.

Broadway and 42d Street, New York City. Cyrus L. W. Eidlitz, Architect.



SECTION OF THE NEW YORK TIMES BUILDING.
Broadway and 42d Street, New York City. Cyrus L. W. Eidlitz, Architect.

But that agreeable erection, harmonious in form and proportion and effective in color as it is, and having only the drawback of standing behind the edifice it signalizes, and up an alley, is purely monumental and has no utilitarian exigencies to consider, such as could not be gotten away from in the design of an office building of which every cubic foot must be made practically available. Moreover, that peculiarity of the campanile which does not reappear in the Produce Exchange at all is the very thing which commended it, and almost imposed it, for the present purpose. In his praise of the original Fergusson says: "The octagonal projections at the angles give it considerable relief." For the present purpose they do much more. They indicate a means whereby, through emphasizing and exaggerating them, the irregularity of a trapezoidal tower may be so dissembled that it is reduced virtually to a rectangle without the use of the awkward makeshifts which had been found after all ineffectual. By projecting still more boldly than in the arcade beneath and in turn receding still more deeply, an effect of massiveness, a sense of relief, a play of light and shade are secured which are not only grateful in themselves, but which really and effectively emphasize the framed construction which they reveal while concealing. In all architecture there is a permissible and artistic exaggeration. The depth of reveal which attracts us in a mass of masonry is very seldom attainable, on the engineering principle of "the least material that will do the work." And, while the framing indicated in this tower is doubtless much more massive than the actual necessities of the case prescribed, the sense of framed construction is more emphatically given in the tower than in the substructure. And it will be observed that the treatment is strictly "practical." There is no sacrifice of room, of light, of any utilitarian consideration. How far the devices of the architect have been successful in their primary purpose of dissembling the irregularity of the tower it remains for actual execution to show. So far as drawings can show, it may seem to promise a complete success.

To me the most admirable point of design in the projected building is the success with which the huge and lofty tower is at once incorporated in the substructure and detached from it, "belonging" everywhere. It is prefigured in the very base, and in the fenestration of the "shaft," asserts itself more strongly in the "capital," by means of the single three-story opening corresponding in its treatment to the openings of the main arcade and yet differentiated from them with emphasis by the flanking pilasters and the bounding piers kept down to the utmost plainness, until finally, above the cleverly treated feature which at once continues the attic of the lower building and becomes the base of the tower, the monu-

ment works itself entirely free of the former conjunction and goes climbing on its way to its dizzy culmination.

Evidently the Times Building is a valuable addition to our short list of artistic skyscrapers, in spite of the failure which has already perhaps been sufficiently dwelt upon, and which it shares with almost all of them, the failure to found the architecture at all points upon the facts of the case. To do that with complete success would be triumphantly to solve the problem of the skyscraper. That it remains to be done does not detract from the interest and value of the partial and tentative solutions propounded by artistic architects. As skyscrapers go, and even as they very exceptionally go, the Times building promises to be worthy of its site, of its conspicuousness and of its isolation. To the writer it has been very interesting to trace the evolution of the design of a typical tall building from the first dream of the architect confronted with a rare opportunity to the finished drawing for what seems so much like a contradiction in terms as a "practical monument." He can only hope that his readers will at least partly partake this interest.

Montgomery Schuyler.

FIG. 1. ST. MARK'S, VENICE. THE NAVE IN PARALLEL PERSPECTIVE. FROM A BROOKLYN INSTITUTE SURVEY PHOTOGRAPH. THE AMOUNT OF WIDENING IS SHOWN BY FIG. 2.

THE ARCHITECTURAL REFINEMENTS OF ST. MARK'S AT VENICE.*

FIVE years and a half have elapsed since the Architectural Record published my paper on a peculiar system of construction to be found in various Italian churches, which is especially remarkable in St. Mark's at Venice, and which may be specified as the widening refinement.† This widening refinement is shown by two illustrations which are republished from that paper in Figs. 1 and 2 of this article.

In the Memoirs of Art and Archæology which are now in course of publication by the Macmillan Company for the Brooklyn Museum, it has been possible to return to this subject with new evidence.‡ In 1901, the architect then in charge of St. Mark's, examined the church in my company with reference to the facts which had been published in 1897, and drew up a written statement which verifies them as facts of original construction. Many new photographs were made to illustrate these facts, and plumb measurements were taken to the number of about one hundred and seventy. Fresh evidence was also procured in several other Italian towns, especially in Vicenza and Orvieto. Statements regarding churches in Pavia and Milan which had been a matter of personal assertion, in the publication of 1897, were verified by photographs and by plumb measurements in detail. Finally the church of S. Giorgio Maggiore at Venice by Palladio was found to exhibit this kind of construction, which dates a survival of it to the sixteenth century.

The purpose of this paper is to call attention to the Brooklyn Museum Memoir (No. 2) as containing the most complete account of the architectural refinements of St. Mark's, which has so far been published. In this publication of over one hundred pages, containing forty-four illustrations and fourteen plans, the space has, however, only been sufficient for a very condensed account of our knowledge of the widening refinement, although most of the text and illustrations and all of the plans have been devoted to it. Consequently, an attempt to still further compress or summarize this condensation may not be wise. I shall rather propose to make a selection from the illustrations of the Memoir and therewith to emphasize the most prominent facts which are shown by them.

*The illustrations of this article are published by the courtesy of the Trustees of the Museum of the Brooklyn Institute.

†Vol. VII. No. 2; "An Echo from Evelyn's Diary." 1897.

‡Memoirs of Art and Archaeology, Vol. I., No. 2. The Architectural Refinements of St. Mark's at Venice. With Remarks on Other Churches Showing a Similar System of Leaning Verticals; Especially those in Orvieto, Vicenza, Milan, Pavia, Bologna and Arezzo, and including the Renaissance Church of S. Giorgio Maggiore at Venice. By William Henry Goodyear. With fourteen plans and forty-four illustrations. Published by The Macmillan Company, 66 Fifth Ave., New York, for the Brooklyn Institute of Arts and Sciences, December, 1902.

A discussion in detail of the plumb measurements will be avoided, and reference is made to the Memoir for this discussion. Features which are not represented by the illustrations selected will not be considered, generally speaking, and this applies to the very im-

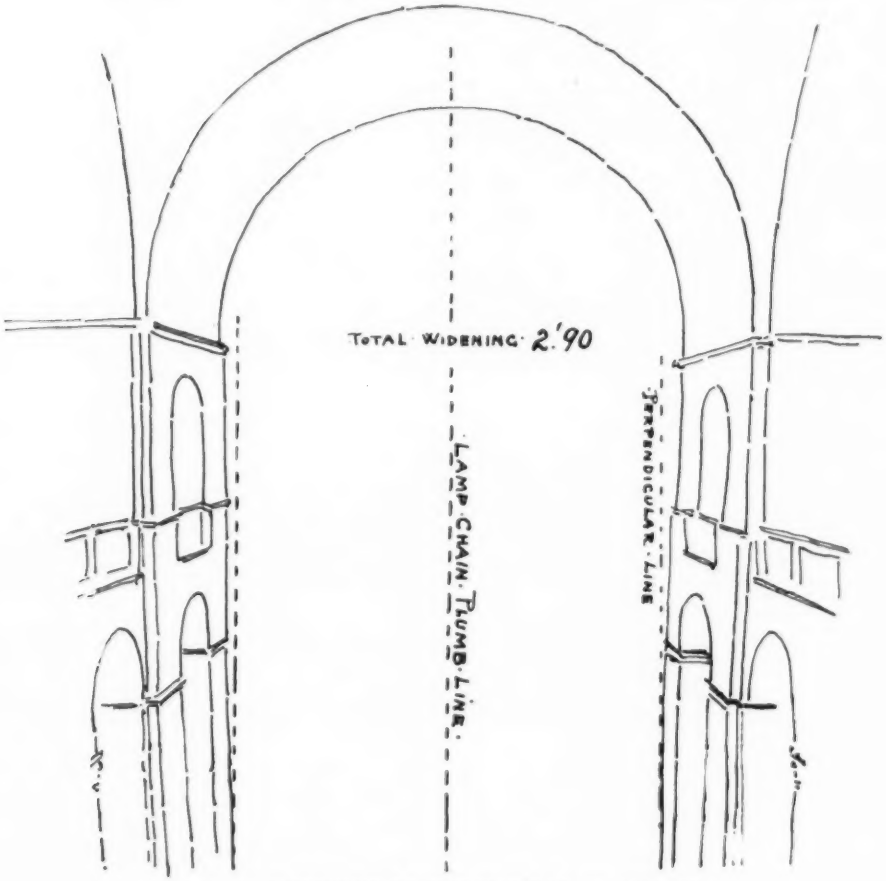


FIG. 2. WIDENING OF THE NAVE IN ST. MARK'S.

Tracing from the photographic original of Fig. 1. The widening is estimated at 2.90, feet and decimals, or 2 feet 10½ inches, for the points indicated by the vertical lines. This estimate has been verified by plumb measurements in detail for the piers and faces shown in Fig. 3.

portant feature of the horizontal curves, among others. For this entire topic reference is also made to the Memoir.

For a general and immediate acceptance of the widening refinement as an established fact for mediæval architecture, the certificate obtained from Commendatore Pietro Saccardo is to be considered as having the first importance.

Commendatore Saccardo, who is now a man of some sixty

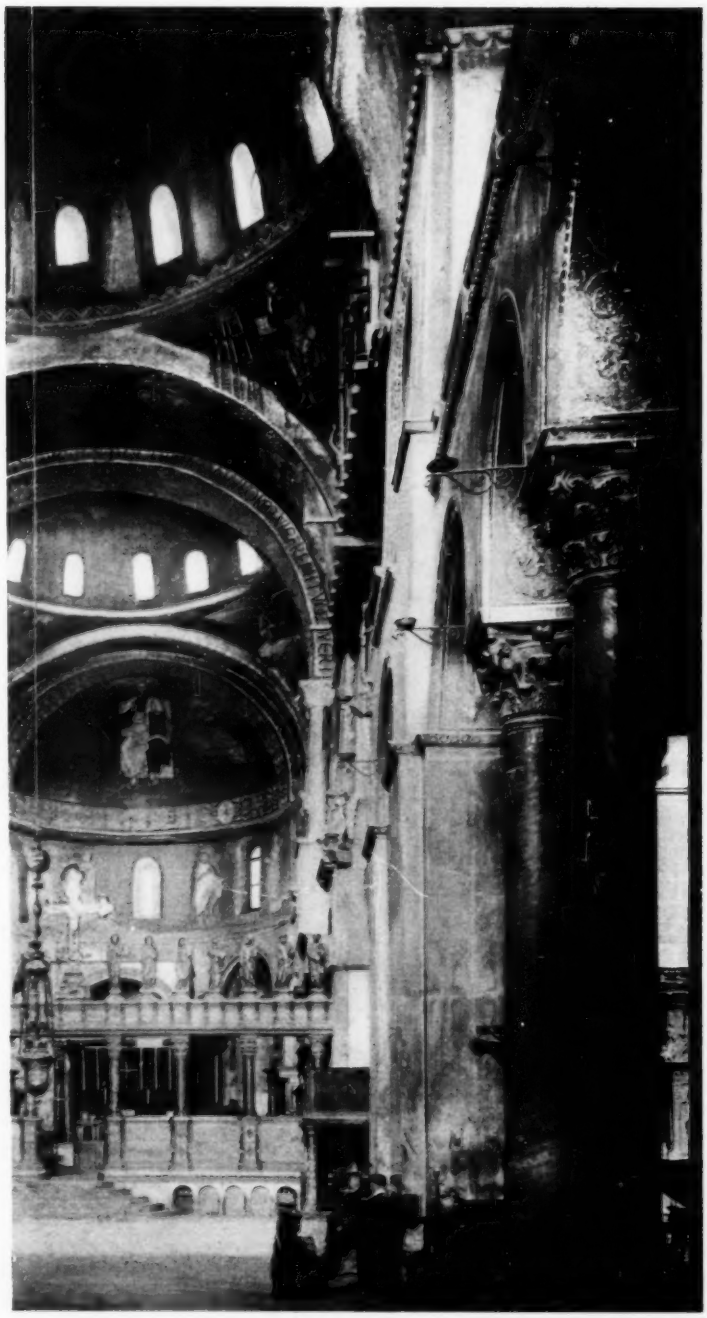


FIG. 3. SOUTH SIDE OF THE NAVE OF ST. MARK'S.

From a Brooklyn Institute Survey photograph. Showing the changes of direction in the vertical lines.

FIG. 4. LEFT (NORTH) AISLE OF ST. MARK'S.

Accurate drawing from a Brooklyn Institute Survey photograph. The plumb measurements under the drawing (foot decimals) were taken with a line of 17 feet.

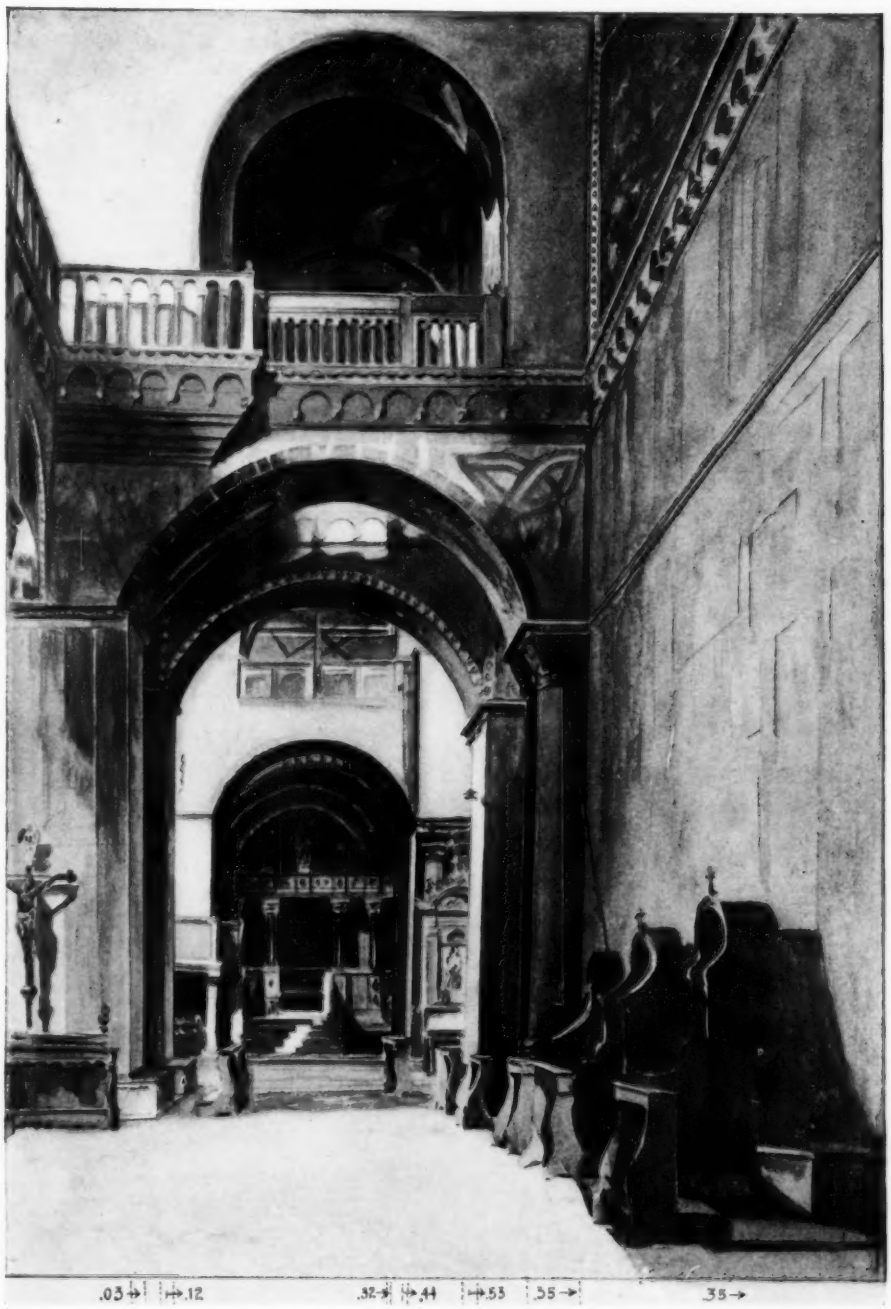


FIG. 5. THE RIGHT (SOUTH) AISLE OF ST. MARK'S.

Accurate wash drawing from a Brooklyn Institute Survey photograph. The plumb measurements under the drawing (foot decimals) represent the leans for a line of 17 feet.

FIG. 6. ST. MARK'S. SOUTH TRANSEPT WALL. LOOKING EAST.

Accurate wash drawing from a Brooklyn Institute Survey photograph. The plumb-line shows a lean of 15½ inches in about 33 feet. The foot decimals under the drawing represent plumbs from the pavement with a line of 15 feet.

years of age, has spent the greater part of his life in daily official contact with St. Mark's. His plan of the foundations of the church has been republished by Mothes, the highest German authority on the history of Italian architecture. Saccardo has, moreover, published a monograph on the history of the modern repairs of the church. He has also been employed as one of the collaborators

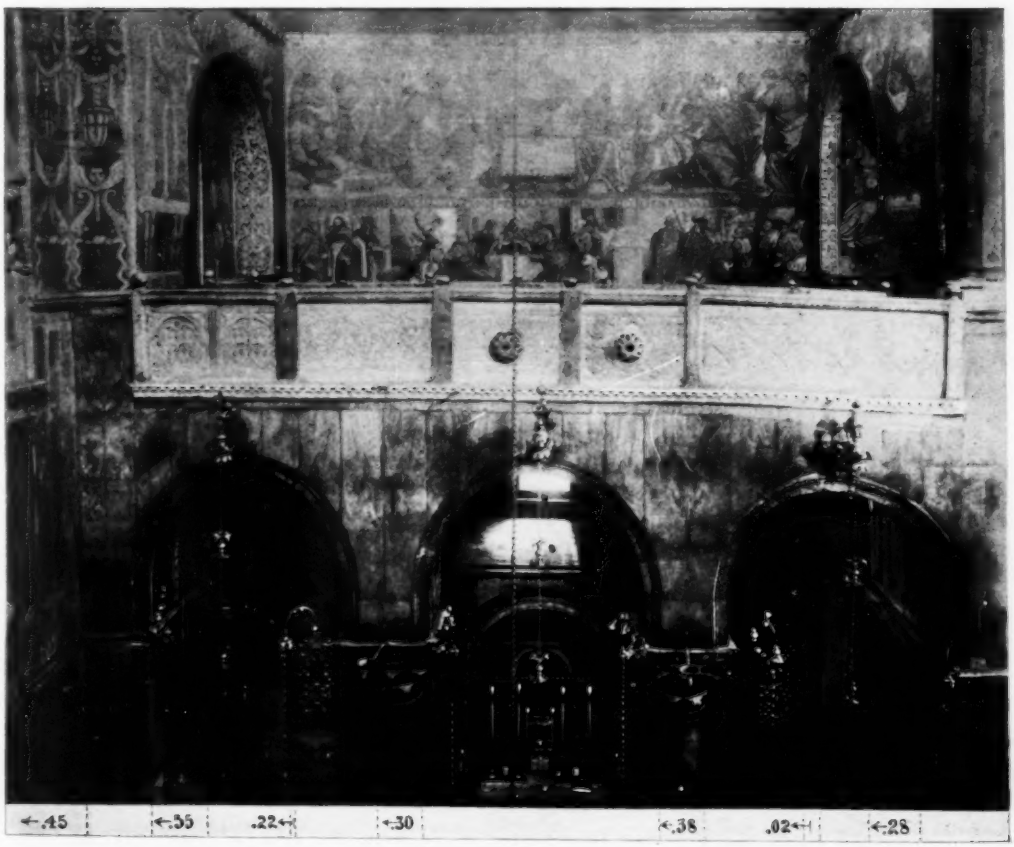


FIG. 7. SOUTH TRANSEPT, ST. MARK'S. FACING WEST.

Accurate wash drawing, from a Brooklyn Institute Survey photograph. Showing a perpendicular wall on the left, above leaning terminal wall below. The foot decimals under the drawing represent plumbs from the pavement with a line of 15 feet. The top of the parapet is about 33 feet from the pavement.

on the text of Ongania's sumptuous publication of St. Mark's and the entire section of that work which relates to the mosaics of the church is from his pen. Thus, not only his official position as engineering architect in charge of the church in 1901, but also his special studies in the history of St. Mark's, give weight to his opinion as an expert.

FIG. 8. SOUTH TRANSEPT, EAST GALLERY OF ST. MARK'S.
LOOKING NORTH.
From a Brooklyn Institute Survey photograph. Showing the widening refinement.

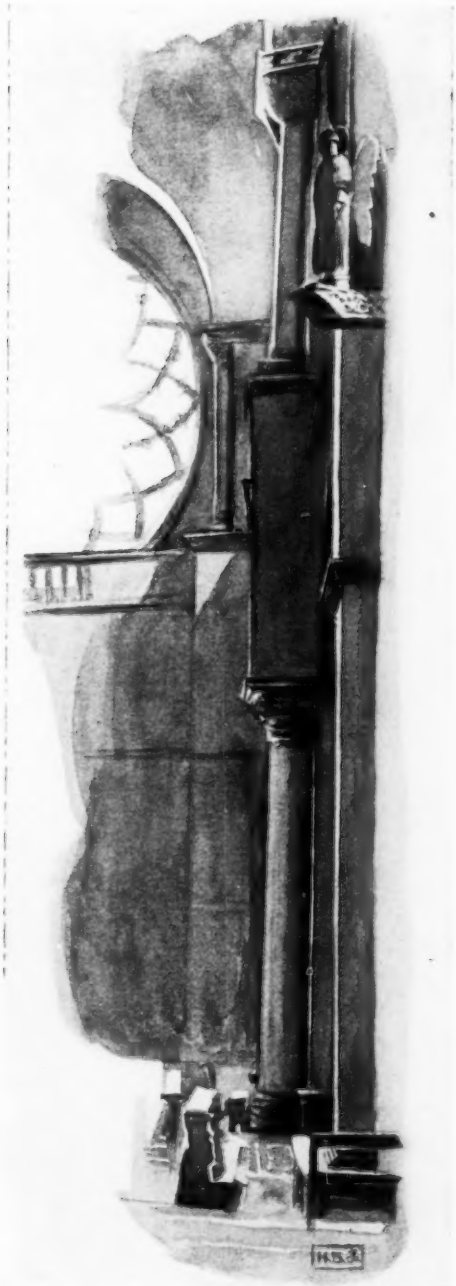


FIG. 9. ST. MARK'S, SOUTH TRANSEPT, WEST SIDE. LOOKING SOUTH.

Accurate drawing from a Naya photograph; showing the widening refinement in the gallery. Note the capital tipped downward to avoid foreshortening of the decoration.

Commendatore Saccardo's attitude was skeptical when I first called on him at his house, on August 16, 1901, and explained the purpose of my visit as being to request him to verify with me the existence of a constructive widening in St. Mark's. I may add that this skepticism was thoroughly shaken within five minutes after we entered the church on the following day and that it had vanished entirely when we had been together in the building for half an hour. This conversion was mainly due to the fact that the vaultings would manifestly have fallen, if the widening had been due to an accidental outward spread of the supports, to the extent which had been made known by the Brooklyn Institute Surveys of 1895, and the publication of 1897.

Within a few days of our first interview and in response to my request for a certificate verifying the constructive facts the letter which follows in translation was received.

TRANSLATION.

Basilica of S. Marco in Venice.
Direction of Repairs and of the Studio of Mosaics.
Venice, August 19th, 1901.

Very Dear Sir:

Allow me first of all to congratulate you on the important studies which you have made for many years of the ancient monuments and especially regarding certain particulars of construction which hitherto have been generally overlooked and which reveal ingenious and scientific artifices, on the part of the architects who built them, for obtaining special optical effects. It has been already known how, for example, it was customary in mediæval architecture to incline forward the gables and pinnacles, as is still done for pictures and statues. This artifice is particularly apparent in the pinnacles of the principal façade of our Basilica of San Marco, but not so in those on the lateral façades, because the architect who restored them some thirty years ago did not comprehend the art which had directed their original collocation, and therefore he set them upright. The same artifice [of forward leaning] is visible in the Porta della Carta of the Doge's Palace and in many other monuments even outside of Venice; as, for example, in the Tombs of the Scaligers at Verona. It is likewise known that the principal façade of our Basilica is constructed with an inward curve in plan.* The six pinnacles of the same façade are likewise of unequal height and so arranged that they rise toward the centre. If the one at the southwest angle makes an exception, that is because it was restored after a fire by one who did not perceive the artifice and who made it equal to the last but one.

You, however, have found new features of this kind which I had always supposed to be accidental, but which, being common to so many other monuments, must be accepted as true artifices of construction.

*This curve was published in the Architectural Record, Vol. VI., No. 4, Fig. 5: It has been republished with a more satisfactory photograph in 'Memoir No. 2,' Fig. 44.

Such are the forward leans of the columns of the lower order of our Basilica façade, whereas those over them are perpendicular.*

Such are the interior piers supporting the larger domes, which lean inward,† thus considerably increasing the cord of the arch, as compared with the distance between the bases [of the piers] without any settlement or distortion of the arch; which proves that they had been originally built in this manner.

Such are, finally, the parapets of the galleries which connect the arcades of the transepts and which are distinctly curved in elevation and with a rising convexity. It must certainly be admitted in this last instance that some distortion may have been caused, or at least augmented, by the pressure of the masonry masses on the yielding soil of Venice. However, the occurrence is too uniform to be considered as purely accidental.

For the rest, your studies are most interesting and may lead to other discoveries still more important; for which you are to be congratulated, and I beg you to believe me

Your most humble servant,

PIETRO SACCARDO,

[Engineering Architect in charge of St. Mark's at Venice.]

The observations of 1895 (published, as mentioned, in 1897) had been confined to the main fact of a widening of the nave and transepts and even for these spreads few measurements had been taken in detail. The call on Commendatore Saccardo was made immediately after my arrival in Venice in 1901, and no additional observations had been made before the interview of the following day, which resulted in the letter above quoted. During a fifteen days' stay in Venice which followed, I plumbed the church in detail with very remarkable results, which may now be briefly mentioned.

(a) The spread of the nave is not produced by an outward lean of the piers in one uniform direction from pavement to vaulting, as it is in S. Ambrogio at Milan, and in S. Maria della Pieve at Arezzo. On the contrary the lower piers are nearly perpendicular. The surfaces between the capitals of the piers and the string-course which corresponds to the top of the gallery parapets show the strongest leans. The surfaces above this string-course, which reach to the springing of the arches, show a slight return bend toward the perpendicular. Fig. 3 shows quite clearly these various changes of direction. For an account of the plumb measurements, giving the sum total for the widening, as entered on Fig. 2, reference is made to the Memoir.

(b) Whereas, as just remarked, the piers proper are nearly perpendicular, but still showing in all cases slight outward leans, the aisle walls, and the engaged columns which project from them, have very pronounced leans up to the height of the galleries

*See "Memoir No. 1," pp. 19-22, with illustrations.
†i. e., in the downward direction.

(Figs. 4, 5), but there is a return toward the perpendicular higher up (Figs. 4, 5).

(c) The outward leans in the side aisles (walls and engaged columns) are repeated in the end walls of the transepts (Fig. 6),

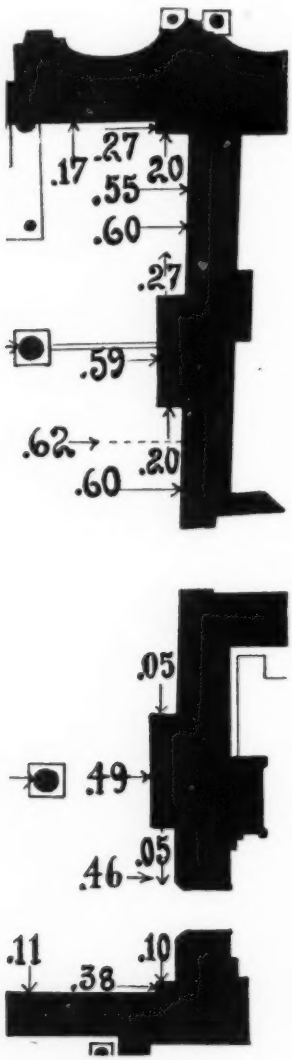


FIG. 10. PLAN OF THE SOUTH TERMINAL WALL, SOUTH TRANSEPT.

Showing plumb measurements from the pavement with a line of 15 feet. The height of the wall is about 33 feet. The whole amount of each lean is about double that entered on the plan. The darts show the intersection of the two widening systems. Corresponding results are obtained in the north transept.

but appear only to a slight extent in the intervening transept columns. The plumb-line which is seen in Fig. 6 records a lean of over fifteen and one-half inches in a height of about thirty-three feet. A plumb from the parapet of the north transept verified a lean on that side of sixteen inches.

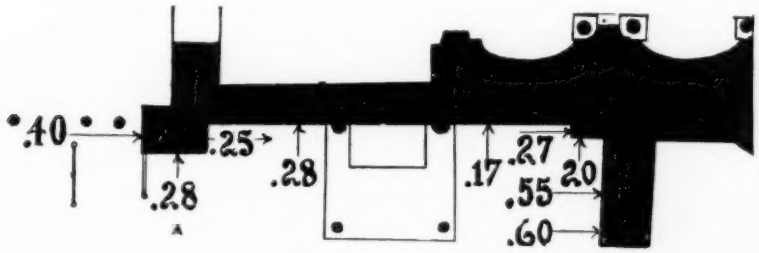


FIG. 11. PLAN OF EAST WALL, NORTH TRANSEPT, ST. MARK'S.

Plumb measurements with a line of 15 feet. To illustrate the eastward widening system, and the double leans, as called for by its intersection with the north and south system. The pilaster leaning .42 east and .32 north is shown by Fig. 4, on which the entry of .32 north denotes it.

(d) The walls and piers above these terminal transept walls are generally or nearly perpendicular (Fig. 7).

(e) The spread or widening of the transepts (Figs. 8, 9) which crosses and intersects the widening system of the nave (and the continuation of that system in the end walls of the transepts) is carried into the pilasters of the end walls which line with the transept arches (Fig. 10) and into the pilasters in the angles of the transept aisles (Fig. 10).

(f) This intersection of the two systems is also found in the pilasters of the east transept walls at the points where they face the aisles of the choir (Figs. 11, 12).

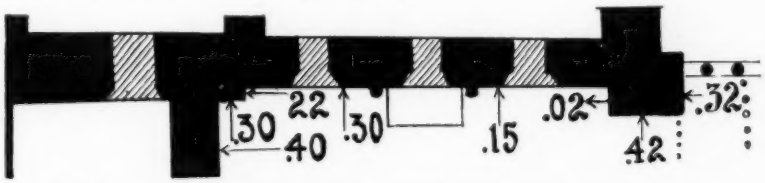


FIG. 12. PLAN OF EAST WALL, SOUTH TRANSEPT, ST. MARK'S.

Plumb measurements with a line of 15 feet. To illustrate the eastward widening system and the double leans, as called for by its intersection with the north and south system.

(g) The east and west widening system is found on both sides of both transepts in both galleries. (Figs. 8, 9). As regards the piers, it begins at the pavement on the east side, but it does not begin at the pavement on the west side (Fig. 9). On this side the widen-

ing is confined to the gallery (with the qualification that it starts from the pavement in the pilasters of the terminal transept walls (Fig. 10). In Fig. 8 it may be observed, by looking at the west (left) side of the view, that the westward lean is confined to the gallery. As regards the aisle walls of the transepts there is a slight lean in the west walls (Fig. 10 includes one of the plumbs in the west wall). The pronounced lean of the east walls is shown by the plans (Figs. 11, 12).

(h) The widening system of the nave continues in the choir (Figs. 41, 42 of the Memoir).

(i) There is a widening system in the north vestibule. Consequently the columns which belong to this system lean in an opposed direction to that of the leaning columns on the other side of the same wall, which belong to the system of the north aisle (Plan 14 of the Memoir.) Thus in Fig. 4 of this article it is to be noticed that there are columns leaning in an opposed direction on the opposite side of the same wall, viz., in the north vestibule.

The following remarks may be made regarding these announcements. There is nothing in these announcements to prove that the leans are to be considered as the ultimate object of the given refinement. When the whole church is considered, some of the verticals start with perpendiculars but bend outward before they return to the curves of the arches. Other verticals which lean outward, bend back to the perpendicular before the curves of the arches or vaulting are reached. It follows that we should be justified at present in considering the bend as the dominant fact and in considering the lean as a means to the bend. Undoubtedly we must add to this point of view, that of the purpose to produce an effect of widening, but at all events, the purpose to construct a vertical bend is as definite as the purpose to produce the widening. See for instance the remarks and notes on illustrations under heading g.

A discussion of the purposes of these refinements will be found in the Memoir and also in the important review by the American Architect of March 28, 1903.

The kindness and amiability which were shown by Commendatore Saccardo during my stay in Venice have been continually manifest since that time. On two separate occasions he has addressed letters to me, urging the sending of the Memoirs to experts among his friends. Through his son, Francesco Saccardo, who is also an architect of distinction, also an expert in the history of St. Mark's and also a collaborator on the publication of Ongania, these researches have been brought to the notice of Professor Pompeo Molmenti, President of the Venetian Academy of Fine Arts and of its famous gallery of paintings, who has been

kind enough to honor me with a letter, herewith published, acknowledging the receipt of Memoir No. 2. A letter from Signor Francesco Saccardo concerning Memoir No. 2 is also published herewith, as an evidence of his father's continued interest, and of his own interest, in these researches.

[Translation.] *Wm. H. Goodyear.*

(Venetian) Royal Academy of Fine Arts.
The President.

Moniga, Brescia, January 20, 1903.

Dear Sir and much honored Colleague:

Pray accept the expression of my whole profound gratitude for the sending of your publications, which are an important contribution to the history of Italian art in general and of Venetian art in particular. Your observations on the ancient Italian architecture (Venice, Bologna, Verona, etc.) are truly interesting and have all the attraction of originality.

Every Italian must be grateful to you for the profound study which you have devoted to his country's art. But this gratitude must begin with Venice, whose history in the past has so much resemblance with the modern history of your great country.

Accept, dear sir, the expression of my profound respect and of my sincere admiration. Your very devoted,

POMPEO MOLMENTI.

Venice, January 25th, 1903.

Dear Sir:—I am most grateful for your goodness in sending me your precious "Architectural Refinements of St. Mark's at Venice," which I have gone over with great satisfaction, and in which I have admired your fine talent and your marvellous and patient studies.

I must tell you also that your investigations, which have been crowned with such fine results, give me an especially particular pleasure, because I had myself already made, as an amateur, observations analogous to yours regarding certain monuments of Venice and had acquired the conviction that certain abnormal features of many of our most ancient edifices were not the work of chance or of decay, but were, on the contrary, work of intention by the architects, who secured by these means, that picturesque character which most of the mediæval monuments possess.

My father desires that I should express to you, without delay, all his appreciation and all his admiration for your interesting and colossal work, which has no parallel with us. He believes and I also believe, with very firm conviction, that it would be highly useful to make known to the Italians how, and with what enthusiasm and high intelligence, our monuments are being studied in America, and how the philosophy is reaching us from the new world, which has presided over the formation and development of Italian Art.

My father begs me to convey to you his hearty compliments, to which I add the expression of my own high consideration.

I am, dear, sir, your very devoted and grateful servant,

[Translation.] FRANCESCO SACCARDO.

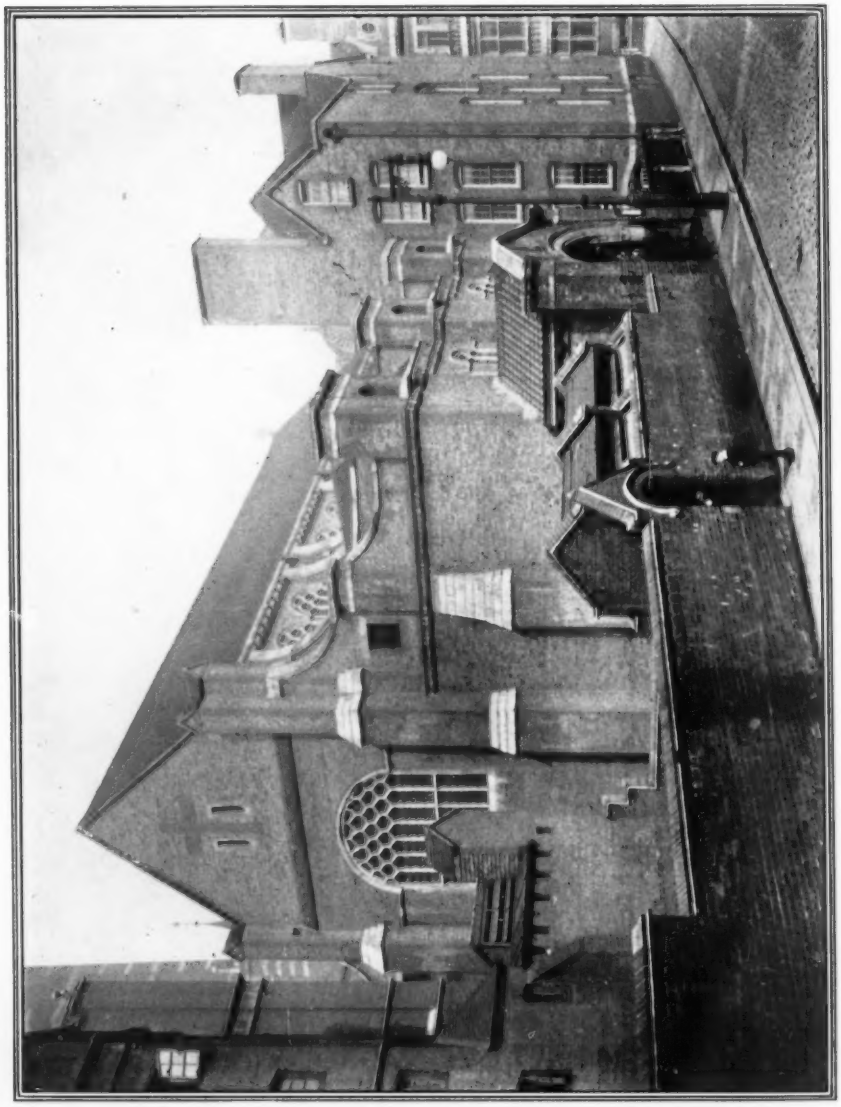
EXTERIOR OF ST. ANSELM'S CHURCH FROM THE NORTHEAST.

Mayfair, London. Balfour & Turner, Architects.

ST. ANSELM'S CHURCH, MAYFAIR, LONDON.

NO sooner had the best English architects of the Gothic revival succeeded in producing churches which fairly challenged comparison with those of the Middle Ages, than a reaction commenced in favor of an admixture of Renaissance detail. Sedding was one of the most enthusiastic leaders of this movement, and if the architects of St. Anselm's Church, Mayfair, show in their church no trace of his influence it may be at least claimed that the broader sympathies in ecclesiastical design displayed in his art made their work more readily acceptable. Messrs. Balfour and Turner intended "to avoid all competition with ancient buildings," and as far as that was possible in the case of a building, the use of which is governed by the tradition of nineteen centuries, they may be considered to have succeeded. But it was by no means fully possible, and the interior as readily recalls those of Brunelleschi at Florence as the exterior suggests a barn to the man in the street. It is mainly the contrast of a grey green stone with uncolored trowelled plaster that recalls the interiors of S. Spirito and S. Lorenzo, and it is merely the long unbroken tiled roof outside and the rough brick walls which suggest the barn. There is a crudeness which may be regarded as strength in the corbelling at the eaves, but the lack of refinement in the gargoyles and offsets to the buttresses degenerates almost into coarseness. A porch at the southwest corner is roofed with pantiles and contains a flight of steps, necessitated by the fall of the ground and greatly dignifying the doorway within. The more frequently used twin porches at the northwest are quite shallow, and the worshipper steps from the street into the church somewhat precipitately. All these porches are lined with glass tiles and the carving of the capitals hints at the refinement within.

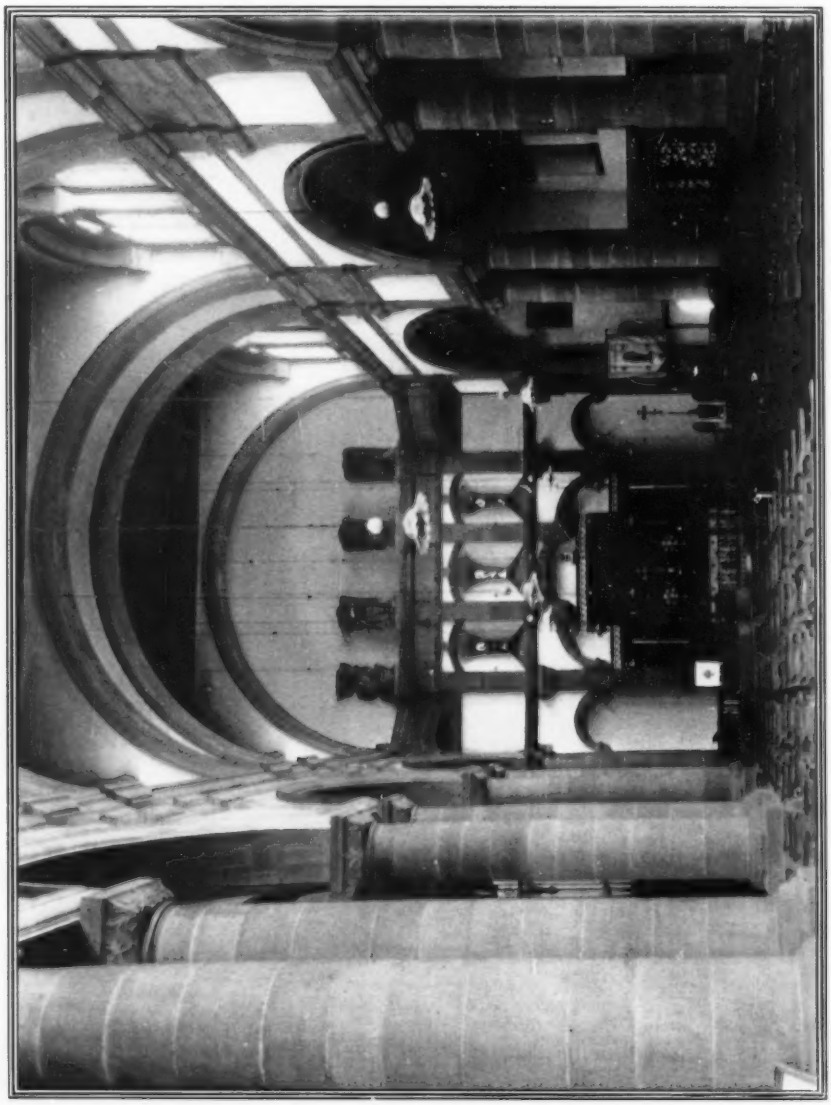
The church and vicarage adjoining are erected upon a site measuring only 115 feet x 93 feet, yet the architects have produced an interior of considerable spaciousness and dignity. The nave is but 26 feet wide (measured between the columns) and the aisles 12 feet each, the total internal width, including the Lady Chapel to the south, being 70 feet. But the disposition of the columns produces a variety of vistas, and the proportions are such as to convey an unexpected impression of scale. The church is four bays in length and is spanned by heavy beams carrying flat paneling darkly stained; each bay is separated from the next by coupled elliptical arches of stone and a short length of barred vaulting. The arcade is also elliptical and supported by sturdy coupled columns, the two bases of which rest upon single blocks of stone 8 feet in



EXTERIOR OF ST. ANSELM'S CHURCH FROM THE SOUTHWEST.
Balfour & Turner, Architects.

Mayfair, London

PORCHES ON THE NORTH SIDE OF ST. ANSELM'S CHURCH.
Mayfair, London. Balfour & Turner, Architects.



GENERAL VIEW OF THE INTERIOR, ST. ANSELM'S CHURCH, LOOKING EAST.
Mayfair, London. Balfour & Turner, Architects.

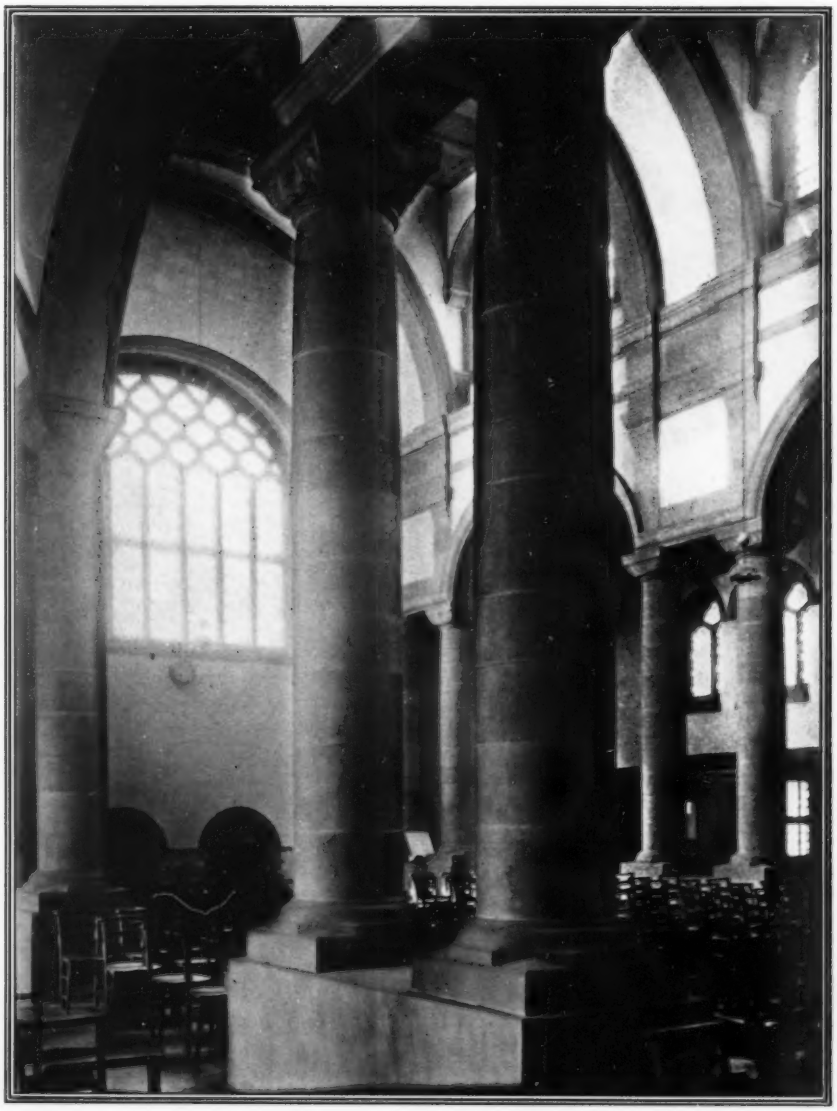
length, and of a height which raises them above the chairs with which the church is seated. As the eye follows the lines of the columns upwards to the vault a difficulty of the design becomes apparent, namely, how to treat satisfactorily the space between the capitals and the springing of the transverse arches. The entablature upon which the latter rest might have been continuous yet independent of the columns; it might have been confined to the piers in short lengths and supported upon corbels, or brought into connection with the columns by pilasters. None of these methods is entirely employed or entirely discarded. A complete entablature occurs only upon the piers, but the lines of the cornice and part of the architrave are continuous. Pilasters of very light proportion and without bases, rising from the archivolt, quickly become corbels and are employed to support the entablature. The archivolt does not die upon the cap from which it springs, but returns horizontally upon the abacus to meet that of the next arch, forming thereby a continuous mould from one end of the church to the other. The aisles and Lady Chapel have barrel vaults of concrete above the columns, but the spaces between are groined in plaster.

The east end is a somewhat remarkable composition. The entablature is carried across it, breaking around four pilasters which support large sculptured emblems of the evangelists. The corners are canted upon squinches and help to convert the vault beyond the easternmost transverse arch into something approaching an elliptical semi-dome. The centre pilasters do not rise from the ground, but from corbels, and therefore do not interfere with the altar hangings affixed to the wall. It is a question whether the arches between the pilasters are a gain. There is nothing like them in any other part of the church and their outlines are not entirely pleasing.

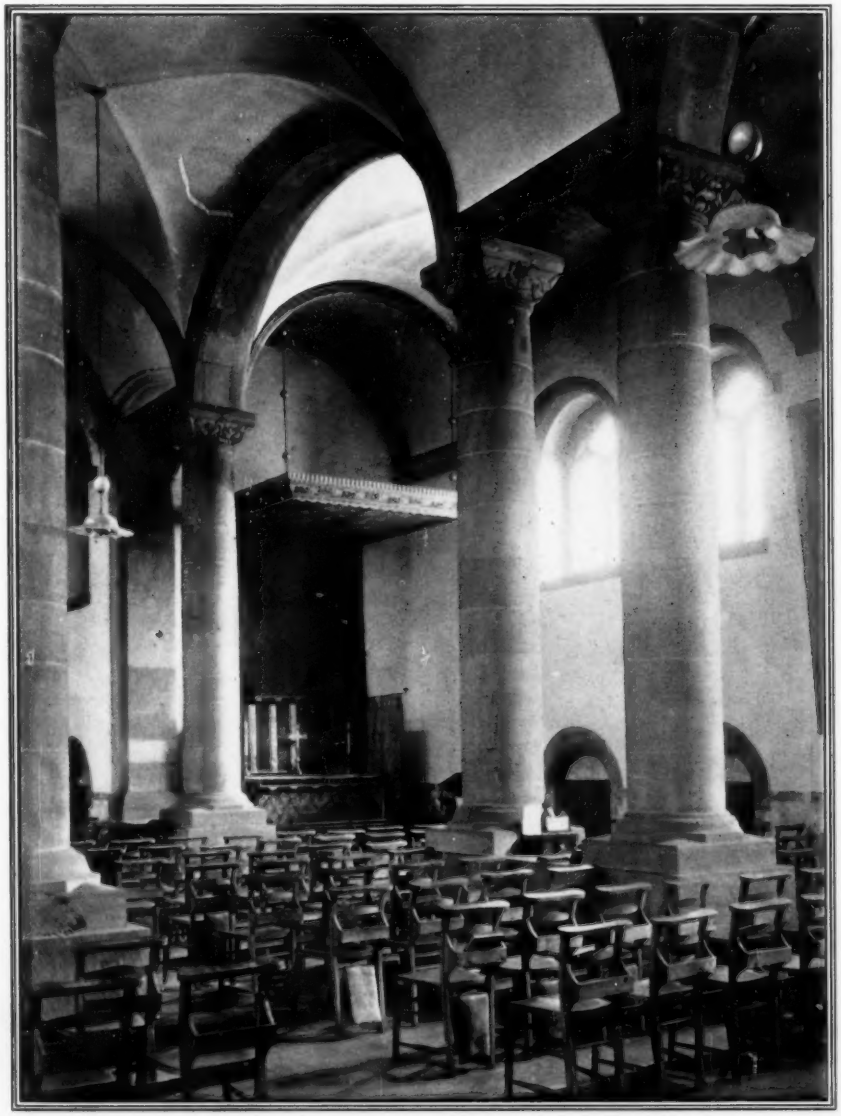
Between the pilasters and above the small arches just referred to are three small widely and deeply splayed windows, glazed with brilliant pot metal set in leads of a flame-like design. The other windows of the church have traceried heads of a recticulated debased Gothic type and are filled with Prior's glass in wide leads, a thick, even glazing which catches and reflects lights at varying angles with consequent brilliance of effect.

The carving of the capitals is by Mr. Lawrence Turner, a brother of the architect. One at the west end bears the arms of the diocese and of the donor of the site (the late Duke of Westminster), but the remainder are of simple floral design, naturalistically treated and sculptured upon a ground but slightly sunk, and all interesting through their variety and freshness.

The masonry throughout is of blue Robin Hood stone from Yorkshire. The surfaces have not been rubbed, but only waxed,

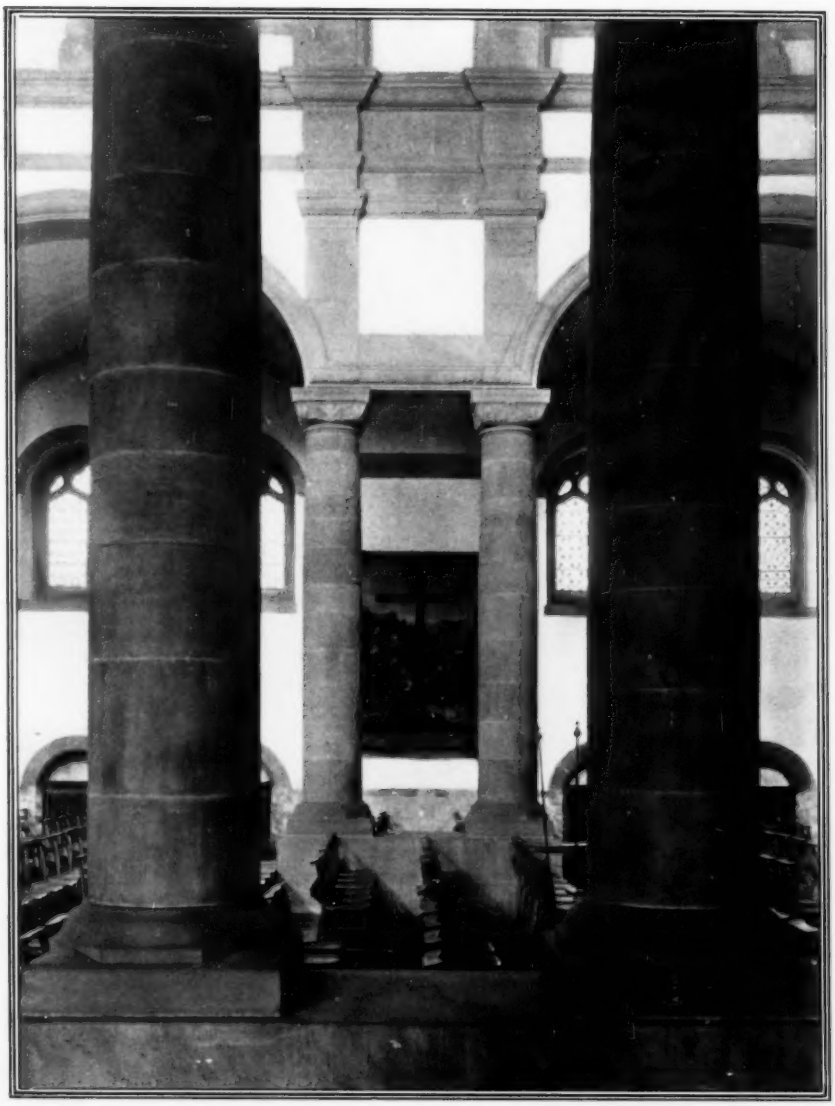


INTERIOR OF ST. ANSELM'S CHURCH, LOOKING WEST.
Mayfair, London. Balfour & Turner, Architects.



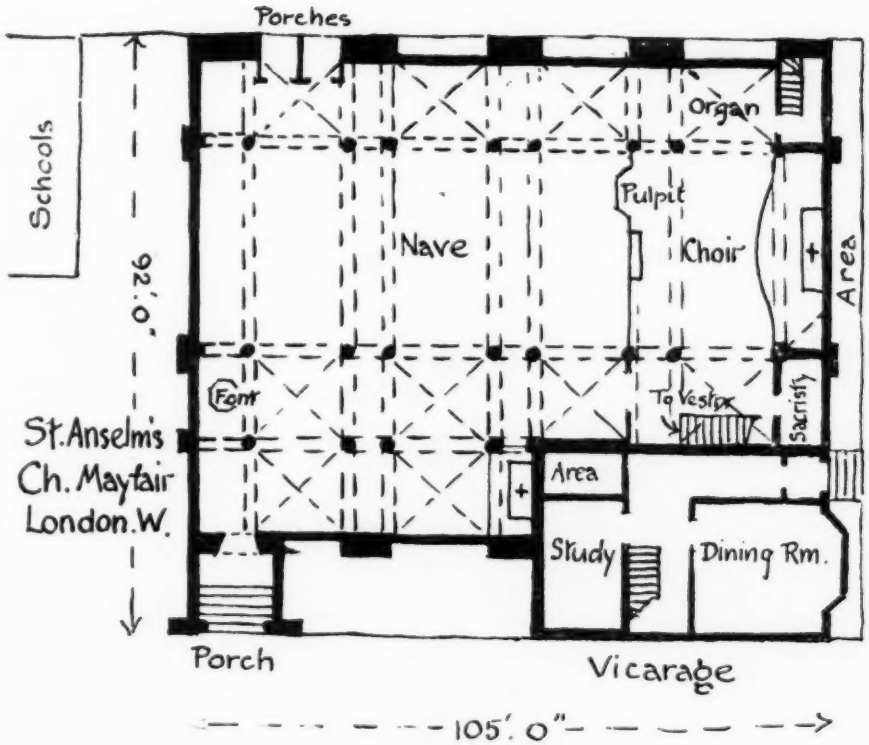
THE INTERIOR OF ST. ANSELM'S CHURCH, LOOKING TOWARDS THE LADY CHAPEL.
Mayfair, London. Balfour & Turner, Architects.

INTERIOR OF ST. ANSELM'S CHURCH FROM THE SOUTH DOOR.
Mayfair, London. Balfour & Turner, Architects.



A VIEW ACROSS THE NAVE OF ST. ANSELM'S CHURCH, LOOKING NORTH.
Mayfair, London. Balfour & Turner, Architects.

PORTION OF THE SCREEN IN THE SOUTH CHOIR AISLE.
St. Anselm's Church, Mayfair, London. Balfour & Turner, Architects.



SKETCH PLAN OF ST. ANSELM'S CHURCH.

Mayfair, London. Balfour & Turner, Architects.

the tool marks remaining conspicuous. Around the church is a dado of pearl-tinted glass tiles; the floor is of pitch pine blocks, waxed, so that apart from the plastered surfaces the interior can be washed down with economy and facility. These plastered surfaces, framed into panels, as they are by bands of masonry, are admirably adapted for fresco or other painted decoration, but the harmony of the interior would be spoiled unless a quiet scheme were prepared and carried out from end to end, from dado to vault, and of this there is small probability. Two framed paintings hang upon the aisle walls, one, an "Agony in the Garden," formed the altar piece in old Hanover Chapel, Regent Street, London; the other a "Crucifixion" by Sabbatini, by its placid landscape background and soft atmosphere once again carries our minds beyond the Alps.

The font is one great block of black-green marble, quite monumental in its solidity. At the east end of the south aisle is a screen of teak, its upper panels pierced with rich carvings. The continuance of this screen beneath the south chancel arch would be a great gain to this end of the church, especially as the chancel is not marked off by any variation of the arcade. It is, however, separated from the nave by a low wall of Irish green marble, and the draughtsman's reticence allows the blocks to display their beauty undisturbed by mouldings. A slight projection or bay in this wall with a bronze desk serves as a pulpit. The pavement of the chancel is of black and green marble squares; the stalls are of teak, solid and plain; the communion rail of brass. The altar is not noteworthy, and it may be that something more monumental is hoped for in the future. St. Anselm's Church was erected in 1895, and stands upon one of those inconspicuous sites which are all that Londoners now seem willing to afford for their churches. It takes the place of Hanover Chapel, Regent Street, the site of which, on account of its great commercial value, was disposed of, and the congregation banished to Davies Street and Cock Yard!

Architecturally, the new edifice deserves to be more widely known, for its interior is unique and of considerable beauty and interest. The suburbs apart, few churches are being erected now in London, but it may be that St. Anselm's will become a notable example of the transition in eccleciastical architecture from the Gothic revival to a new classic Renaissance.

F. Herbert Mansford.

Residence of

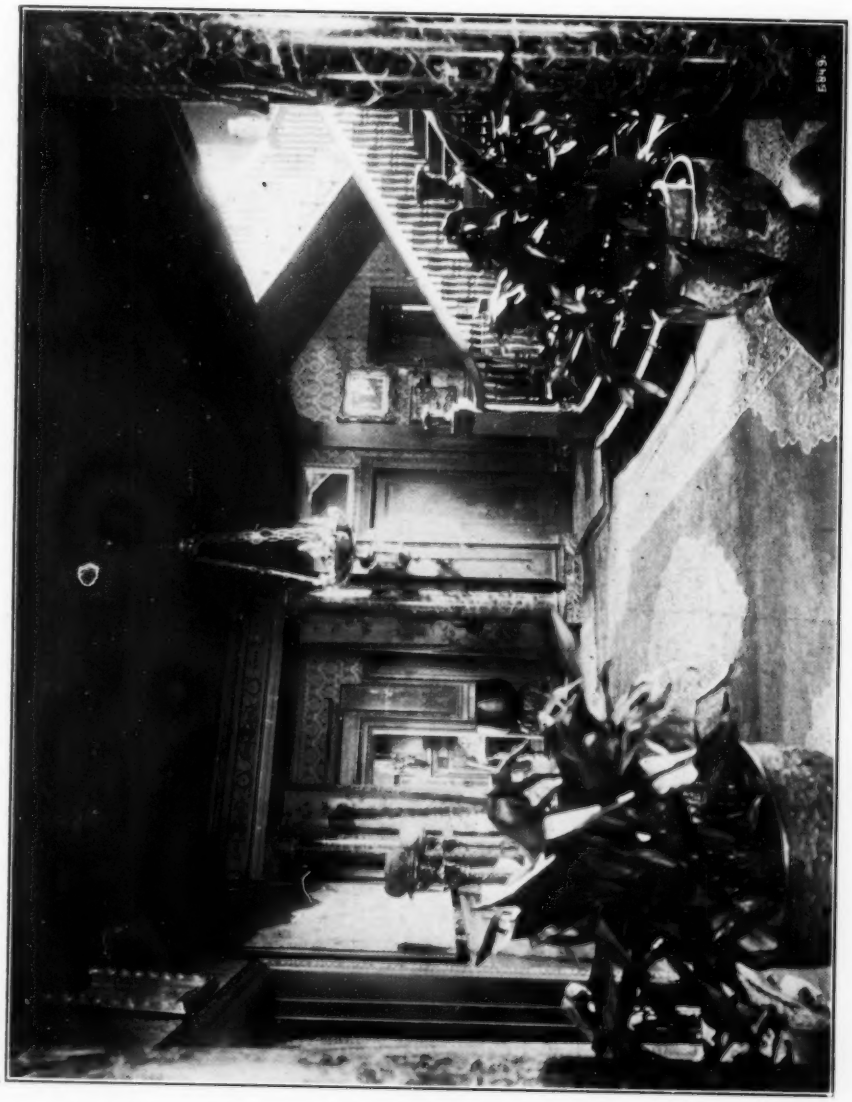
Chauncey J. Blair, Esq.

Drexel Boulevard, Chicago

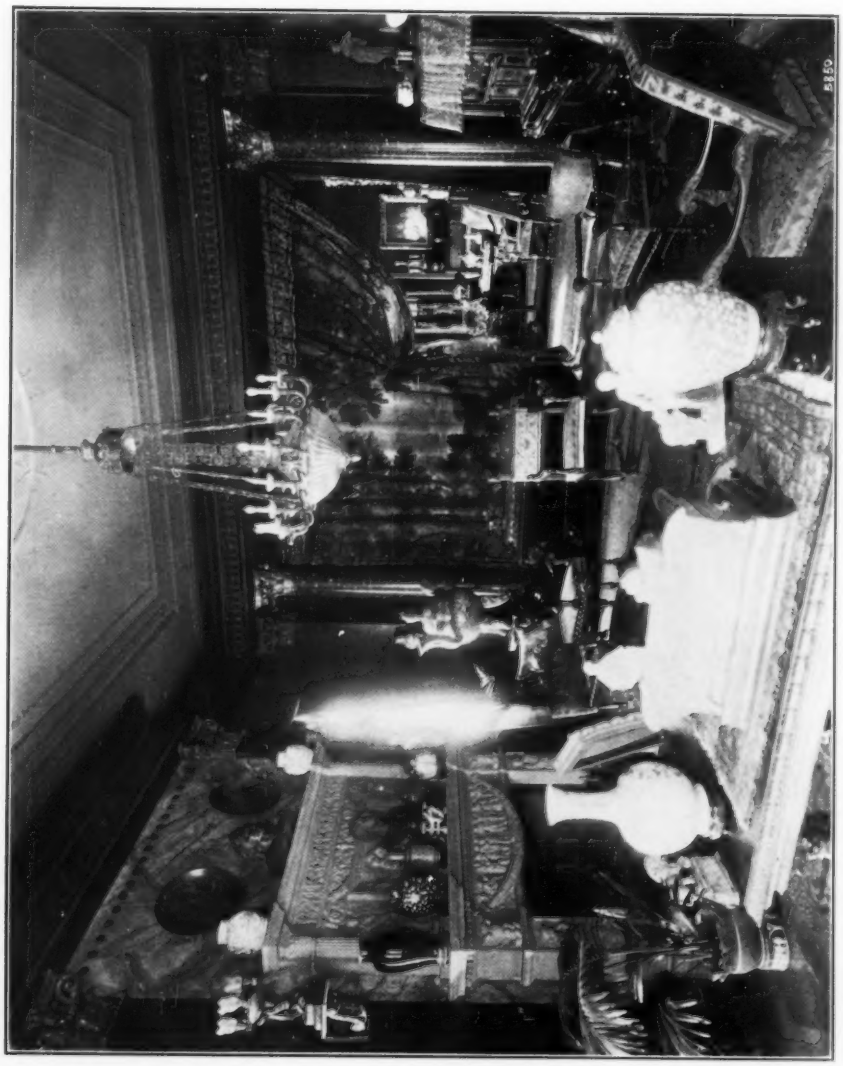
Shepley, Rutan & Coolidge
Architects

THE RESIDENCE OF CHAUNCEY J. BLAIR, ESQ.
Shepley, Rutan & Coolidge, Architects.

Drexel Boulevard, Chicago.



HALL OF THE RESIDENCE OF CHAUNCEY J. BLAIR, ESQ.
Drexel Boulevard, Chicago. Shepley, Rutan & Coolidge, Architects.



DRAWING-ROOM IN THE RESIDENCE OF CHAUNCEY J. BLAIR, ESQ.
Drexel Boulevard, Chicago. Shepley, Rutan & Coolidge, Architects.

SITTING-ROOM IN THE RESIDENCE OF CHAUNCEY J. BLAIR, ESQ.
Drexel Boulevard, Chicago.
Shepley, Rutan & Coolidge, Architects.

THE DINING-ROOM IN THE RESIDENCE OF CHAUNCEY J. BLAIR, ESQ.
Drexel Boulevard, Chicago. Shepley, Rutan & Coolidge, Architects.

NEW LIGHT ON MICHELANGELO.*

THE monumental work on the drawings of the Florentine painters, which Mr. Bernhard Berenson has just brought out, is, like everything else of his, full of startling theories and surprises—of new attributions and even of new artists. Thus we have not only "Amico di Sandro," who was invented or discovered, as one looks at it, in the preliminary work undertaken for these volumes, but "Alunno di Domenico" and "Andrea di Michelangelo;" while names one has already heard are played about like chessmen, shoals of drawings being taken from pretty nearly every one else, for instance, and bestowed upon David Ghirlandajo, by whom we had nothing. All these novelties are announced with a perfect self-confidence and sometimes with a rather too clearly marked contempt for earlier students of the problems involved. In many cases neither the men nor the works to be considered are of any great intrinsic importance; in others the drawings have been hitherto attributed to one of the great masters, and the critic who would take them from him does well to prepare himself for the inevitable question: "If he did not do them, who did?" The artist may cheerfully leave to the professional connoisseur or the historian the pretty puzzles of "Amico" and "Alunno," but he becomes interested when it is the authenticity or spuriousness of drawings ascribed to Leonardo or Michelangelo that is in question. The more certainly we can separate the work of such a man from that of his followers and imitators, the more definite becomes our conception of the artistic personality of the master himself, while, in the course of the investigation, much new light may incidentally be thrown on the origin and evolution of this or that masterpiece.

Michelangelo, sculptor, painter and architect, is the greatest figure of the Italian Renaissance, and any systematic attempt to distinguish his own work from that of his many imitators must be of interest to all artists and lovers of Italian art. To this attempt Mr. Berenson has brought his extensive knowledge, his acuteness of eye and his independence of thought. What a difference his results, if accepted, may make in our conception of the master is partially shown by the following statement. Among the illustrations to Symonds's Life of Michelangelo are nineteen reproductions of old drawings. One is an obvious copy of a part of the Last Judgment and is so labeled by Symonds; another, which he gives as an old copy, is considered by Berenson as an original. The

*"The Drawings of the Florentine Painters." By Bernhard Berenson. New York: E. P. Dutton & Co. 1903. 2 vols.; folio; 180 plates.

other seventeen are thus disposed of by Berenson: Two are condemned by entire omission from his catalogue; two are attributed to Sebastiano del Piombo; one each is attributed to Bartolommeo Manfredi, Raffaele da Montelupo, a nameless follower of Aristotele da San Gallo, and "a close follower of Michelangelo;" and eleven are conceded to Michelangelo himself, although two of these are shown to be studies for different works from those with which Symonds connected them. Another drawing which Symonds did not reproduce, but on which he bases some important conclusions is attributed by Berenson to Andrea Boscoli. Neglecting the obvious copy, we have thus, out of nineteen drawings reproduced or mentioned in an important book on Michelangelo, only nine that are unquestionably what the author of that book took them to be. Four of these are world-renowned masterpieces which no one could think of doubting, and if they be excluded from the count we have ten probable errors out of a possible fifteen, or the astonishing proportion of two to one.

Of course it is quite possible that it is Mr. Berenson who is in error in some of these cases, but at least he has given reasons for his attributions, and his reasons are often very strong. In studying his book one is apt to find one's tendency to agree with him in pretty strict proportion to the opportunity for following his argument afforded by the plates he gives or by one's previous knowledge. His ascription of many important drawings to Sebastiano del Piombo seems extremely probable, and the reasons given for the attribution of another set of drawings to Raffaele da Montelupo are quite convincing. Our present concern, however, is with the light thrown upon three of Michelangelo's greatest undertakings, the Sistine ceiling, the Julian tomb, and the sacristy of San Lorenzo, by Mr. Berenson's study of a number of architectural drawings by, or ascribed to, Michelangelo.

In the British Museum is a sheet (Berenson, No. 1483) which Symonds reproduced, together with two of the preparatory sketches for the Medici tombs. He calls it "Architectural Sketch No. 3," and says of it: "If meant for the Medicean Sacristy . . . it indicates ideas for the treatment of spandrels and ceiling." This drawing Berenson, following Dr. Wölfflin,* has recognized as what it unquestionably is, a sketch for the first project for the ceiling of the Sistine Chapel. All we had previously known of that project was Michelangelo's own description of it. He says:† "The first design I made for this work had twelve apostles in the lunettes, the remainder being a certain space filled in with ornamental details, according to the usual manner. After I had begun it seemed to me

*Berenson's reference is: "Jahrbücher der K. Preussichen Kunstsammlungen. Vol. XIII.," where, it seems, Dr. Wölfflin attempts a reconstruction of the whole ceiling.
†Symonds. Vol. I., p. 198.

that this would turn out rather meanly." Of course he means pendentives when he says lunettes. The sketch shows a ceiling such as might have been planned by Pintoriccio, and not unlike Sodoma's ceiling, the framework of which Raphael left in the Camera della Segnatura. The apostles were to sit upon great architectural thrones, the tops of which projected well into the

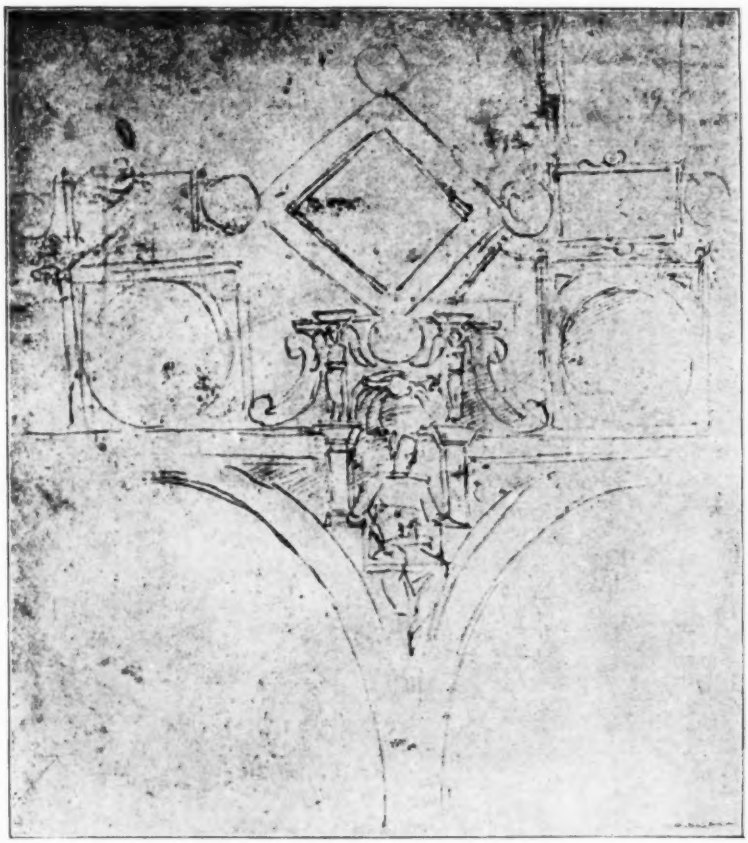


FIG. 1. SKETCH FOR FIRST PROJECT OF SISTINE CEILING.

(Reproduced from the Life of Michael Angelo by J. A. Symonds, with the consent of Charles Scribner's Sons. Architectural Drawing No. 3 of that book. Vol. I., page 384.

vaulting and were separated by diagonal squares, the interstices being filled in with smaller squares, circles and oblongs. It seems scarcely possible that the "ornamental details" should not have included figure compositions in these panels, but such compositions would evidently have been on a small scale and subordinate to the general effect. If the plan had been carried out the ceiling might

have been better, as pure decoration, than that which was actually painted, and would certainly have been far more in harmony with the walls below; but if we should have had a more harmoniously decorated chapel we should not have had Michelangelo. The colossal scheme he finally executed is the only one of his vast projects that was ever carried out in its entirety, and perhaps the only one that could have been. His teeming brain was always planning great combinations of architecture and figures, any one of which would have taken a lifetime to execute by the slow process of his chosen art. The relative rapidity of the art of painting enabled him to carry one of them to completion and to show us how radically his idea of art differed from all that had gone before. The revolutionary nature of his new ideal is emphasized by the evidence we now have of the suddenness of the change, which took place while he was at work on the studies for the ceiling, if not, as his words seem to imply, after the painting was actually begun.

The tomb of Julius II. is the one of Michelangelo's great undertakings which was most mangled in the execution, and which has come down to us in the most fragmentary and unsatisfactory state. Great ingenuity has been expended in the effort to reconstruct his plans, but, unfortunately, much of this has been wasted on spurious materials. Certain drawings which have passed as original studies by the master for this monument are believed by Berenson to be themselves attempts at a reconstruction of the designs of 1513 by some later man—probably a follower of Aristotele da San Gallo, though he seems to admit in an "Addition" that some of them may possibly be by San Gallo himself. They are two drawings, exactly like each other, in the collection of Herr von Beckerath at Berlin* and one in the Uffizi†. One of the Berlin drawings and that in the Uffizi have been put together in some way by Professor Middleton of Cambridge, and the reconstruction was published by Symonds. Nearly every one, indeed, seems to have accepted one or the other of these drawings and to have based arguments upon them. It is not quite clear how the two were combined by Middleton—the upper part appears to be from one drawing and the lower part from the other—but the composite answers perfectly to Berenson's description of the Berlin drawing, and his remarks seem to imply that both drawings are complete.

The arguments against the authenticity of these drawings are of three kinds. First: from the quality of draughtsmanship and manner of handling, which Mr. Berenson considers entirely unworthy of Michelangelo. Second: from the discrepancies which they present with the contract of 1513, the only one to which they

*Berenson, No. 1623.
†Berenson, No. 1632.

can refer. Third: from the inherent improbability of the design as representing anything that Michelangelo can have conceived at that (or indeed at any) time. It would be unfair to judge of the first class of arguments from such a reproduction of Middleton's reconstruction as we have before us. Berenson's statement is sufficiently emphatic. It is, that "at no moment of his career, drunk or sober, was Michelangelo capable of spawning two such abortions of draughtsmanship as these two designs." The mere fact that the architecture is "painstakingly drawn with a ruler" is suspicious. The designs might, however, have a kind of authenticity without being from Michelangelo's own hand. They might be either copies of drawings by him or drawings made by some assistant and passed by him as sufficient for the purpose of explaining his intention to his patrons. The other two classes of arguments are otherwise convincing.

The contract calls for six great figures seated upon the podium. The designs give only four. The figures supporting the dead Pope hardly answer in action to the description in the contract, and certainly do not answer to it in scale. There are three, or at most four figures (if we count the infant Christ held by the Madonna) on the chapel, instead of five, and these, again, are not of the scale called for. This last discrepancy, by the way, is not noticed by Mr. Berenson. On the other hand his objection to the apparent construction of the chapel is not quite comprehensible. He says: "This chapel is pushed forward so much that the seated figures are almost crowded off . . . It would have to be hollow, arching over the group of the dead Pope, yet it is drawn to look flat . . . we should have to assume that this *capelletta* . . . had a depth of more than twenty feet." As the whole drawing is an elevation, simply, there is nothing visible to convey any idea of relative depth of measurements. The chapel would seem to be "drawn to look flat" because it was intended to be flat, and to serve as a mere background for the groups upon the podium.

It is a curious fact that in nearly all the particulars in which these designs differ from the contract they agree with Condivi's description of the first design of 1505, written long afterwards, and with the description which Vasari based upon Condivi's. It is doubtless this agreement which led to the acceptance of the drawings, yet it is just what was to be expected if the drawings are an attempt by some later architect to reconstruct Michelangelo's design of 1513 from all available sources; for the descriptions were printed and the contract was not. There is this same adherence to the descriptions in the most un-Michelangelesque inventions of the draughtsman, whoever he was.

Neither the contract nor the descriptions give any clear idea of

FIG. 2. SPURIOUS DESIGN FOR THE TOMB OF JULIUS II.
(Reproduced from the Life of Michael Angelo by J. A. Symonds, with the consent of Charles Scribner's Sons. Vol. I., page 138.)

the chapel, which did not exist in the first design, except that it was to be of a certain height and was to contain "five figures larger than any of the others"; so that it is no wonder that this part of the drawing is incomprehensible. The central figure upon it seems to be a Madonna "floating sylph-like in a mandorla" which has no visible relation with anything else, and on either side is a very long female figure of baroque elegance. Below the Madonna comes the sarcophagus with the figure of the Pope and his supporters. Condivi describes these figures as "two angels," of whom one "appeared to smile, rejoicing that the soul of the Pope had been received among the blessed spirits; the other seemed to weep, as sorrowing that the world had been robbed of such a man." So in the design we have two silly figures, utterly un-Michelangelesque in action and character, but marked as "angels" by the addition of wings, an addition Michelangelo, the anatomist, never made to any figure of his.

The four seated figures on the podium are in languishing poses, which remind one of the sort of thing one sees on the Jesuit churches. One of them is a Moses, but in an entirely different attitude from the Moses we know. He has been spread out to fill the space left for him, and given a table in either hand. Michelangelo's Moses in that place would entirely disorganize the design, yet Condivi states that that statue was a part of the first scheme for the tomb, and we know, independently of him, that at least two figures were roughed out before that scheme was abandoned. There is every reason to believe that the Moses as we know it is a comparatively early work and was from the beginning destined to be a part of the monument.

On the face of the podium were to be niches, each, according to the contract, to contain two figures. Vasari states that these groups represented "Victories," and accordingly in the drawings we have draped and winged female figures standing on or over other figures, apparently imitated from the river gods at one time destined for the Medici tombs. But Vasari had also stated that the Victory of the Bargello was intended for one of these groups. There is a difficulty as to scale, for the group could not possibly go into one of these niches, but at least the statue shows how Michelangelo would have treated the theme. Is it because of these drawings that the unlikely suggestion has been made* that Michelangelo intended bronze wings to be added to the Bargello group?

Between these niches, according to Condivi, were to stand "terminal figures, to the front of which were attached . . . another set of statues bound like prisoners." Was Condivi misled by the hermae which form a part of the tomb as actually constructed? These

*By M. Guillaume. See Symonds, Vol. II., p. 89.

FIG. 3. THE VICTORY OF THE BARGELLO.

(Reproduced from the Life of Michael Angelo by J. A. Symonds, with the consent of Charles Scribner's Sons. Vol. II., page 90.)

hermae are too short to allow of the placing in front of them of the slaves now in the Louvre, but we know that the whole design was cut down in scale. The contract calls only for pilasters, but there is an undoubted drawing at Oxford* which, with studies for the Sistine ceiling, shows six sketches for slaves, one of them in the attitude of one of the Louvre statues, and above this and another are faintly outlined terminal heads. At some time then during the work on the ceiling (Berenson says about 1510) Michelangelo must have contemplated slaves bound to terminal figures, but these heads are much smaller than those on the design we are considering, are higher above the heads of the slaves, and there is no indication of drapery about the shoulders. Such a combination of the slaves and hermae as is shown in our design it is almost inconceivable that Michelangelo should have made.

FIG. 4. SKETCH FOR ONE OF THE SLAVES. (Reproduced from Berenson's Florentine Drawings, with the consent of E. P. Dutton & Co. Plate CXXXIV.)

Such, freely paraphrased and with some added suggestions of my own, are Berenson's arguments against the authenticity of what has long figured as Michelangelo's design for the tomb of Julius II. They seem to prove that it is a late attempt to reconstruct the original design after the descriptions of Condivi and Vasari or a fantasia upon Michelangelo's theme after the fashion of several founded on the Medici tombs and executed by Aristotele da San Gallo and Andrea Boscoli. To clear it away does not greatly help us to realize the master's real intentions, but at least it saves us

*Berenson, No. 1562, Pl. CXXXIV.

from attributing to him a monstrosity of taste which none of his authentic works suggest.

Was it entirely the fault of the successive Popes who demanded Michelangelo's services that the tomb came to so little? There are hints that, although he grumbled, the new engagements were really welcomed and even anticipated by him, and that, independently of all contracts, he was constantly changing his mind. There is in the Casa Buonarroti, on the back of a sketch for the façade of San Lorenzo,* a drawing which seems to show that within a few months of signing the contract of 1516, which called for a group of "Pope Julius and two other figures to support him," Michelangelo had decided that one supporting figure was sufficient. To the end of his life it was difficult to get anything definite out of him regarding his intentions. He evidently hated to be bound, although he had little scruple about breaking all specifications. We know with what difficulty he was prevailed upon to have a model made for the dome of St. Peter's. He not only made an entirely new plan for the Sistine ceiling, after the work was begun, but he modified that plan constantly, changing the scale of his figures as he went along. Indeed he was always singularly indifferent to matters of scale and capable of remarkable anomalies in that respect. He loved to make gradiose projects and was impatient of the labor necessary to carry them out, and he was constantly dissatisfied with his work and ready to abandon it as soon as it expressed his intention, while he had little sense of composition. It is probable that, in spite of the models and contracts, he never had more than a hazy idea of just what the tomb was to be, and had never bothered himself to think out more than the few figures actually begun for it. The Moses he saw clearly and finished, but he never named the other figures on the podium. When he had nearly completed two of the slaves he lost interest in the motive and was quite ready to change his measurements in such a way that their use had to be abandoned, and to give them away to a friend. In the case of the Victory his interest in the theme seems to have led him to carry it out on a scale quite incompatible with his general plan for the monument. Then he got interested in the still more colossal scheme for the façade of San Lorenzo, and in his new ideas for the Medici tombs, and he abandoned the Julian tomb altogether (as he had abandoned his twelve apostles when one was roughed out, and his fresco of The Bathers when the cartoon was completed), and allowed it to be put together anyhow, with no further interest on his part than to get it off his hands with as little loss of time and money as possible.

The façade of San Lorenzo came to nothing and was given up

*Berenson, No. 1456.

in 1520 and the Medici tombs at once begun. Their history, as letters and drawings seem to disclose it, is much the same as that of the tomb of Julius—certain details seen clearly from the start and held to, while everything else is fluctuating and variable. Here also certain spurious drawings have had to be cleared away, but there are a number of genuine ones which Mr. Berenson has tried to date and arrange. We need not follow him so closely now, but may rapidly summarize his conclusions. Michelangelo's first plans were, as for the Julian tomb, for a four-square monument standing free. He sent a drawing of this to Cardinal de'Medici in November, 1520, and the cardinal suggested that it would prove too crowded in the space of the sacristy. That plan must then have been abandoned and all drawings for this four-square monument probably antedate the end of 1520. Yet one of these sketches, in the Casa Buonarroti,* shows figures "in the precise attitude of the Night and Day, Dawn and Twilight, as we now see them." Michelangelo next began to experiment on mural monuments, and seems at first to have thought of placing two sarcophagi side by side. The drawing in the British Museum,† reproduced by Symonds (Architectural Drawing No. 2), must have been one of the earliest embodiments of this idea; on the back is a drawing for the square monument, with a plan, and the right-hand side of the drawing on the front is like the one on the back, but the left-hand side is different. This drawing has puzzled Mr. Berenson somewhat. To me it seems clear that it shows two schemes for the monument, drawn one over the other. It was begun as a design for the square monument and then changed to represent the new scheme. The sarcophagi are entirely different from those finally used, and not a figure is or could be like those on the existing tombs. Yet on the same sheet is an unmistakable sketch for the Twilight exactly as it was carried out. The river gods appear, apparently for the first time, in this sketch, one of them being tucked under the left-hand sarcophagus. By 1521 the figures now existing were so certainly fixed in Michelangelo's mind that he ordered the marble roughed out for them from drawings and measured models, yet it is not until 1524 that he seems to have settled upon the architectural arrangement pretty much as carried out, though with considerable difference in detail.‡ In 1526 the river gods are still spoken of as contemplated, though it is impossible to see how they could be advantageously placed. As to the statues of Earth and Heaven, there is no proof that Michelangelo ever seriously contemplated doing them, though he had doubtless at some stage of the project suggested them. What he meant to do with the other

*Berenson, No. 1440.
†Berenson, No. 1495.
‡Drawing at Oxford (by an assistant), Berenson, No. 1709.

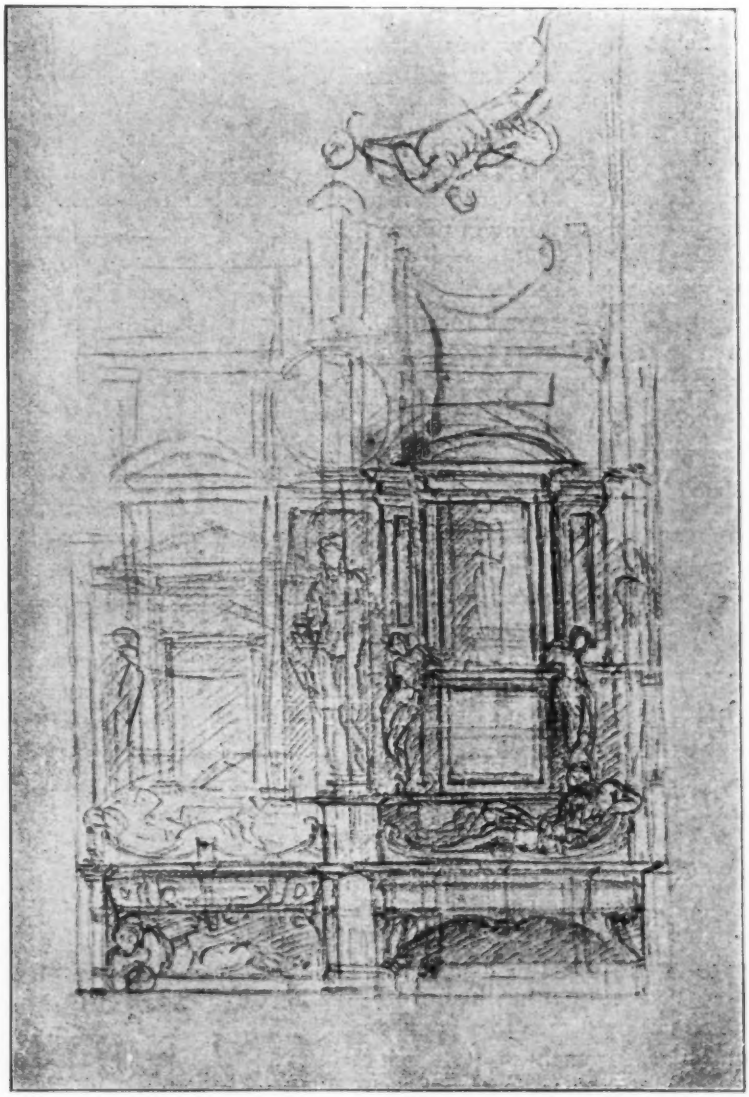


FIG. 5. SKETCH FOR THE SACRISTY OF S. LORENZO.
(Reproduced from the Life of Michael Angelo by J. A. Symonds, with the consent of Charles Scribner's Sons. Architectural Drawing No. 2, Vol. I., page 384.)

two tombs no one could ever find out, though the Madonna, which was meant to form a part of them, was one of the first statues he began.

Feeling, as he rightly does, that the composition of the tombs, as they stand, is nearly perfect, Mr. Berenson is convinced that from a relatively early date—say from 1524 at latest, when we know the present scheme to have been evolved—Michelangelo had no real intention of adding any other figures, and that his references to statues still to be done were merely intended to amuse his patron, while he counted on delay and a quiet obstinacy to get him his own way. Be this as it may, it is evident that, as with the tomb of Julius, he conceived a few figures clearly and adhered to that conception tenaciously, while he left all the rest vague and subject to change. He was still an amateur as an architect, and his setting gave him more trouble than his statues; and he saw big and projected work on a gigantic scale, expecting to design certain figures when he got to them, as he had done in the Sistine Chapel. In the sacristy of San Lorenzo a beautiful composition was evolved by elimination—in the Julian tomb the fragments were patched together into something which would answer. In neither case did he find it possible to carry out anything like what he had at first proposed. His own character and temperament were the ultimate cause of the fragmentary and unfinished nature of so much of his work. His ideas were impossible of realization in solid marble without the collaboration of many hands, and he was incapable of collaborating with any one. If it had not occurred to Julius to set him, against his protest, at the comparatively rapid work of painting it is likely we should never have known what a comprehensive Michelangelesque scheme of decoration could be like. He was a sculptor to the backbone, yet his one adequate expression is a work of painting, and it was only when he had ceased to be either painter or sculptor that he became truly an architect.

Kenyon Cox.

STATUE OF PRINCE AMODEUS OF SAVOY.

Turin, Italy.

Sculptor, D. Calandra.

MODERN ARCHITECTURE IN ITALY.

III. (Concluded).

IN this, the last article of the present series treating of "Modern Architecture in Italy," I shall speak of public monuments—on the squares and in the cemeteries. The subject involves architecture as well as sculpture, but I shall deal especially with those productions that are, in some large measure, architectural.

Those familiar with the political history of modern Italy, will recognize at once how great is the mass of material to be dealt with. National life in Italy is but of yesterday, but the work of our statesmen, our lucky wars, the help we received from so many friendly countries in our struggle for independence, all have given our people much to commemorate. Turin is the city which led in this political movement, and it is natural therefor that it should be richest in memorials of the struggle. Several cities combined do not possess an equal wealth of monuments. It should be said, however, that in Turin the monuments are mostly "on the streets," for the city offers little of interest in the shape of funerary memorials, not possessing any cemetery comparable to those that exist in Milan, or Genoa, or Naples.

Politics and war have furnished both the incentive and the occasion for our architects and sculptors and their work has been concentrated, one may say, in particular upon two men; upon Victor Emmanuel, the king who accompanied our peninsula on her way to independence, and upon Garibaldi, the most popular among the leaders of the revolution. A list of the monuments erected in Italy to these two heroes would be significant as an expression of the spirit of our southern race and as a testimony that in our virtues, as in our vices, we cannot always restrain ourselves to the limits of moderation.

A great national monument originally planned to cost nine million francs, but which will cost by the time it is finished three times that sum, is rising in Rome. The design is unfortunate in its style and spirit, but one would think it might at least have served to check the torrent of honorary statue which has flooded Italy and thus spared us the infliction of so much marble and bronze that does little honor to those it celebrates, and still less to those guilty of its production. The Architectural Record is well known in my country and it is proper that your readers should at the outset clearly understand the general situation.

By the side of Victor Emmanuel and Garibaldi the Savoy dynasty has received also its share in the current "monumentomania," and

as an example of the latest and perhaps the most characteristic of the commemorations of this third cycle I send you a photograph of the monument of Prince Amadeus of Savoy. It is the work of my friend, D. Calandra. It is placed in Turin in the Valentine Park. The author wanted to get away from the monumental rut—rigid base, bas-reliefs, etc. The treatment adopted certainly displays boldness. The composition is extremely lyrical and of a character novel in Italy. The photograph perhaps is more exactly representative than the monument itself, for in reality it gives one an impression of smallness, despite its considerable dimensions.

This unfortunate effect must be attributed to the excess of detail in large high-relief around the base, which is 28 metres long and 4.70 metres high. The horse, with its rider, measures almost 5 metres. It is the work of an artist of talent, opposed to all tradition.

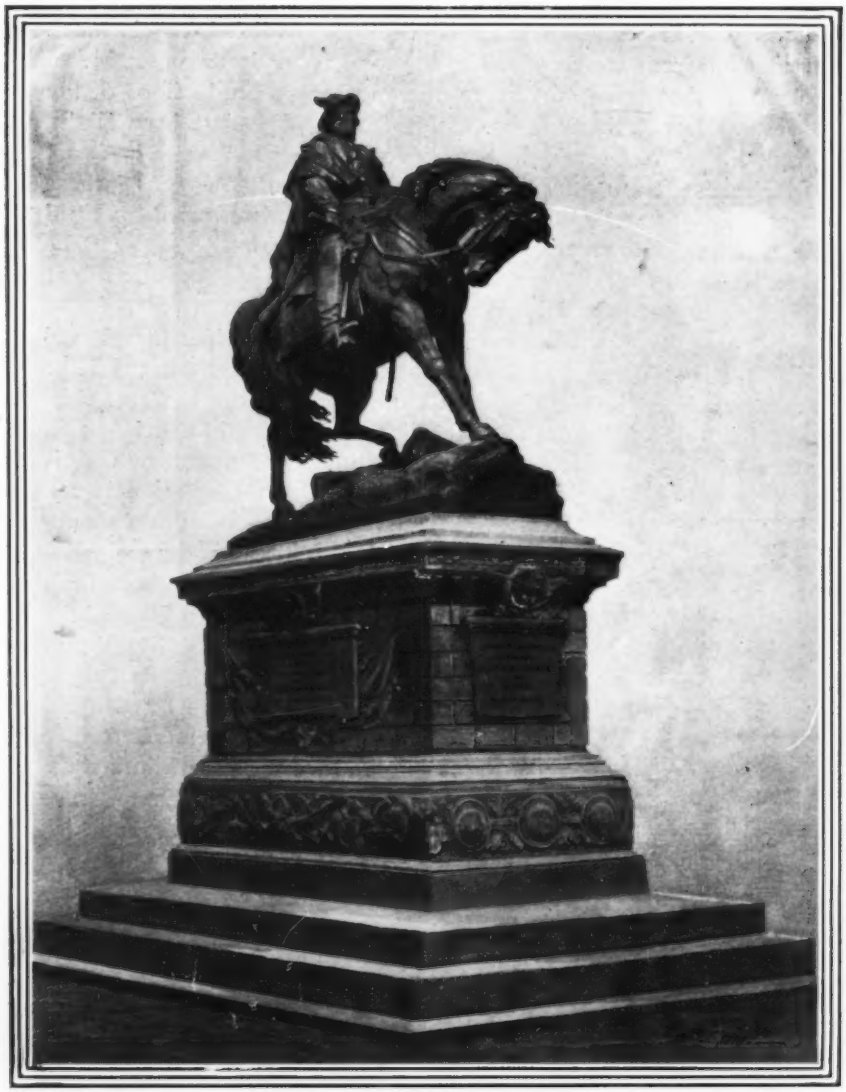
Turning to Rome—what a difference! The Eternal City, the cradle of that classical art for centuries the object of unstinted admiration, possesses to-day no artist of any originality or of any ideas such as the Piedmontese just mentioned. On this point we might repeat Voltaire's statement to Catherine II.: C'est du Nord aujourd'hui que nous vient la lumière. At Rome our architects cannot escape from Rome, from an attenuated lifeless classicism. I have already spoken of the big Victor Emmanuel monument by Sacconi, a classical effort of the anemic type, any beauty in which lies exclusively in some details slightly modernized. E. Ferrari's monument at San Martino, and another work representing a shipwreck are proof of my statements. My friend Ferrari holds an eminent place at Rome, where ideas modern enough in other matters do not "carry over" into art. He is imbued to the bones with the prevalent classicism and illustrates how true it is that all spirit of modernity vanishes in Rome; whereas the further one departs from the Eternal City the more the new spirit of the age makes itself felt and broadens. Thus it is that in Italy the most difficult place to win for the cause of L'art Nouveau is assuredly Rome. Under the shadow of the Pantheon and the Piazza of St. Peter's an artist like Ferrari is reactionary in all matters, including the arts.

Sometimes, even outside of Rome, we find the same conditions. For instance, the Venetians are making efforts to re-erect the Campanile of S. Marco. Reconstruction, complete from foundation to crown is absolutely necessary. Why reproduce a new tower in the old style, particularly as the fallen building was anything but a masterpiece and its proportions did not harmonize with the dimensions of the Square of San Marco? But Venice would revolt if the government opposed the reproduction of the ancient structure. Thus Venice petrified by the reflections of her former art received

with satisfaction from Ferrari his monument to Victor Emmanuel, a fine equestrian statue, but on a classical pedestal with symbolic images in faultlessly Roman style; and Florence, another city living in the past, has erected a monument to glorify Michel Angelo which really one cannot accept. The author has made an ensemble of elements that are strangers to one another—reproductions of the Master's David, the four figures of Morning, Evening, Day, Night, from the Medici tombs in San Lorenzo, the whole on a pedestal which must resent the extravagant combination. I must add, these reproductions are in bronze, which does violence to works conceived in marble. Moreover, it need not be said that figures from the Medici tombs, created for the light of a covered apartment, are not in place in open daylight.

Florence has many other modern monuments in its squares, and particularly in its cemeteries. Among the latest are those to Victor Emmanuel and Garibaldi. Of a remoter period are those of Gen. Fanti, Golodoni, Dante. But the city of Dante and Michel Angelo has not been excessively prodigal in the matter of monuments. 'Tis true Dante possesses three, but none is worthy of the national poet. Indeed, this may be said of all Italy. Nowhere is there a monument worthy of the author of the Divine Comedy, not even in Ravenna, where he closed his eyes. Nor has Michel Angelo been dealt with better. Although the sculptor of David and the painter of the Sistine Chapel was born at Caprese, near Florence, and the latter city is so frequently spoken of as his birthplace, neither of these towns is graced with a modern monument to this great artist, excepting, of course, that on the Piazzale Michel Angelo referred to above. I do not speak of the tomb designed by Vasari during the second half of the sixteenth century, the rich tomb at Santa Croce at Florence. I am speaking of a veritable monument, for which the little statue in a recess of the Loggia degli Uffizi, near the place where formerly the original of the David stood, which has been reproduced in the Colli monument, is not a substitute.

Besides her square and her cemeteries, Florence has her Church of Santa Croce for her monuments. This is the Westminster Abbey of Italy, the Pantheon of her national glory. It would, however, be a mistake to picture Santa Croce as a place of masterpieces or even a necropolis of great Italians. There is, however, much to admire there, and many to revere. Among the ancient tombs an exceptional importance attaches to that of Leonardo Borini, a masterpiece by B. Gamberelli, the model of a tomb of the fifteenth century, and to that of Carlo Marsuppini, the only great work of Desiderio da Settignano, an imitation of the preceding tomb, but superior to it—far superior. And among the modern monuments, there is the latest one unveiled in these later days, that to Rossini,



STATUE OF GARIBALDI.

Rovigo, Italy. Sculptor, E. Ferrari.

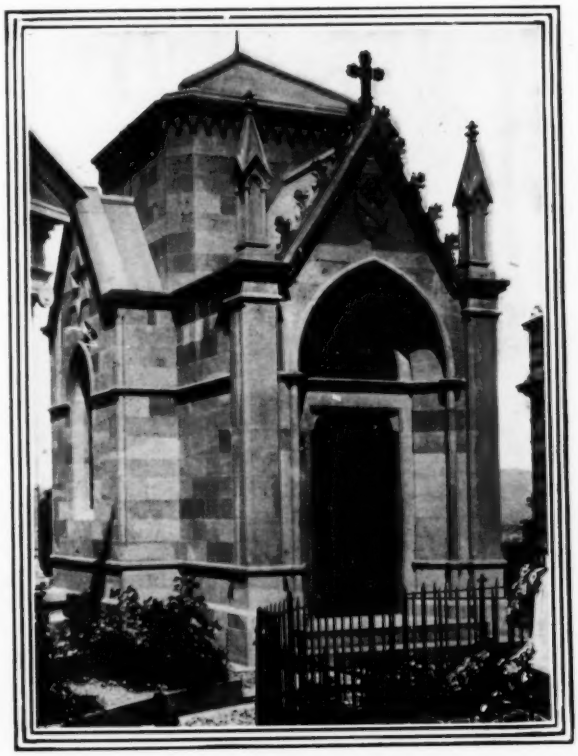
patterned after the two more ancient tombs just spoken of in the same building.

Passing by the Cemetery of the Misericordia, particularly dear to me, for there I did my first work in architecture, I turn to a pretty cemetery at the very gates of Florence, and send you for illustration some pictures of the funerary chapels of San Miniato al Monte. From these your readers may get some idea of the eclecticism of Florentine architects in this department of their art. It will be seen that they turn readily from Neo-Greek to Gothic—Florentine Gothic of a pleasant soberness—and to the Renaissance, here again, Florentine Renaissance. The first chapel on the right clearly is inspired by the famous Pazzi Chapel, the masterpiece of Brunnelleschi, but, ornate as these chapels are and carefully executed in detail, they lack originality, and the specimens I give you indicate well enough the general tone of funerary architecture in Florence from the double point of view of art and wealth, for San Miniato is the aristocratic cemetery of the city.

But those who seek the novel will find it surely at Milan. In this great industrial city, the most active on the Peninsula, there is a monument, the work of Grandi, which is the boldest Italy can boast of, so far as modern art is concerned. Even the competition for this monument had, in a small way, its peculiar side. Grandi was the only competitor who submitted a model of his sculpture. This act put him altogether outside of the conditions of the competition, yet, although he was an offender, the jury selected his design. I would like to have you illustrate this monument, but there is too much of it. I should have to send you an entire series of photographs, not only of the work as a whole, but also of a quantity of figures, which would call for much explanation. At some other time perhaps I shall join Grandi with Bistolfi and I shall then have the advantage of making your readers acquainted with two of our best sculptors. Meanwhile, I am giving you for illustration "Prayer," work of a good and promising character, done by a young sculptor, T. Pogliani. It is one of the latest ornaments of the monumental cemetery at Milan. This, by the way, is one of the most notable cemeteries in Italy. Another important cemetery equally rich in statuary monuments is at Genoa. Architects, however, would prefer the former, for its funerary chapels are very numerous and even very sumptuous. The beginning of the cemetery goes back almost to 1860. Since that date there has been erected an uninterrupted succession of chapels. By the side of tombs in the Egyptian style, or the Greek or the Roman, we find examples of Byzantine work, Lombardic and Gothic, not to speak of a great number of attempts to attain a far-off novelty. By the side of Pogliani's figure I ask you to publish the two pretty

MONUMENT DEDICATED TO MICHAEL ANGELO.
Florence, Italy. Designer, M. Poggi.

chapels done by de Boni, a young architect of talent, who is on his way to a brilliant career. The richer one, that for the Colombo family, is a little forced in its detail, but the Pino Chapel is more sober and attains an extraordinary effect which cannot escape the reader. The spring from which de Boni drew his inspiration as architect of these two chapels is the Middle Ages. Some "classical" elements, the garlands, for instance, have been taken along, but in the emsemble the effects obtained by the cutting of the stones



THE RICASOLI CHAPEL AND TOMB.
Florence, Italy. Architect, Del Moro.

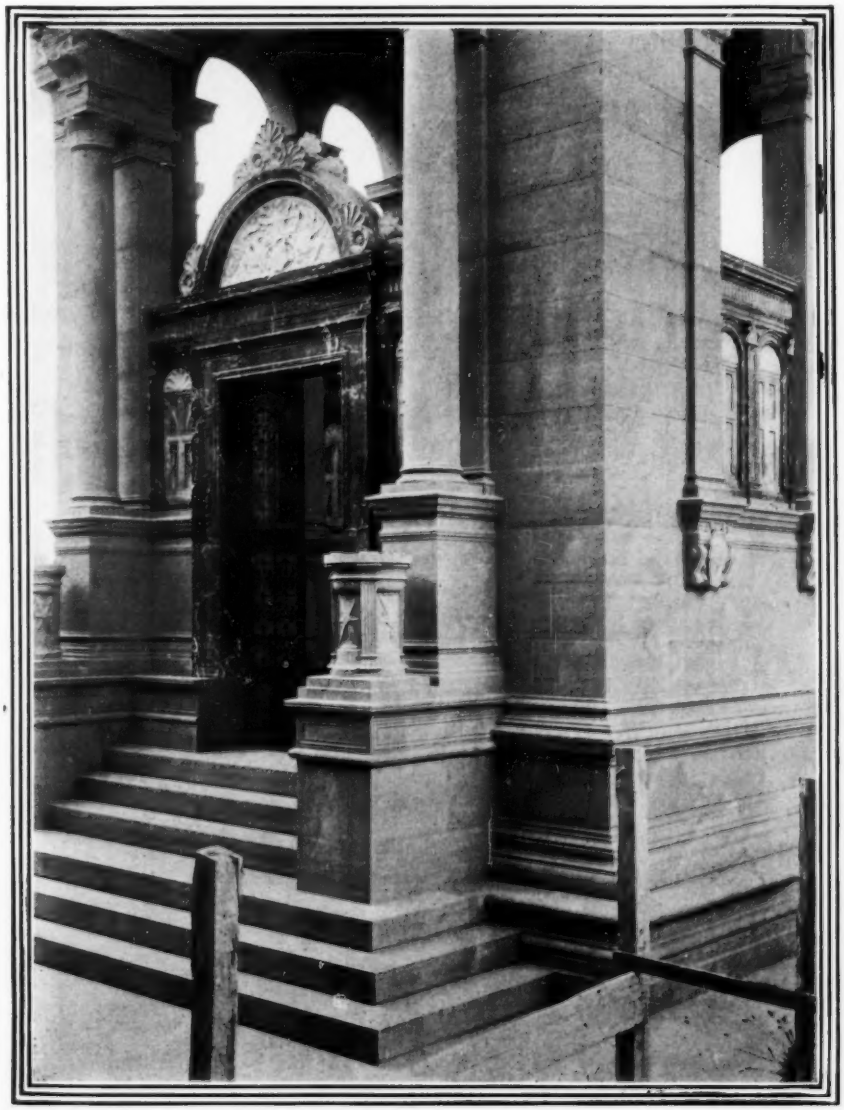
which overlie the moulding give a very powerful impression. It is true that this constitutes to some extent the system of several of the Milan architects, but this does not signify that M. de Boni has not used it to the greatest advantage.

A paper on Modern Architecture in Italy, even a summary sketch, would not be complete without a few words about the preservation and restoration of the monuments. A country like ours had to meet the problem, rather delicate, of the preservation of

its artistic patrimony. As a matter of fact our times have seen petitions submitted, laws enacted, offices and departments established, and the problem was studied to some extent in all its forms. But in Italy there occurred with regard to the monuments to be preserved what may occur to a patient when he has been forced by a long illness to diet continuously and then at last receives permission to eat—a frightful indigestion. While formerly this indifference towards the preservation of the monuments was barbarous with us, the eagerness to preserve has at present become excessive and even annoying. People want to preserve everything, restore

CHAPELS AND TOMBS AT THE CEMETERY OF SAN MINIATO AT MONTE. Florence, Italy.

everything, reduce everything to its ancient beauty; and if it is possible to find people in Italy who, driven by their ambition rather than by their intelligence, will give money for the restoration of a monument it is almost impossible to find any one who will give even the most paltry amount in favor of modern art. We have here to do with a veritable fad, and although the budget of the State for the restoration of monuments is small when compared with the enormous quantity of structures to be preserved, scattered, as they are, over the surface of the Peninsula, the budget is pretty large when we take into account what is allowed for the other departments of public instruction.



THE TALON CHAPEL AND TOMB.

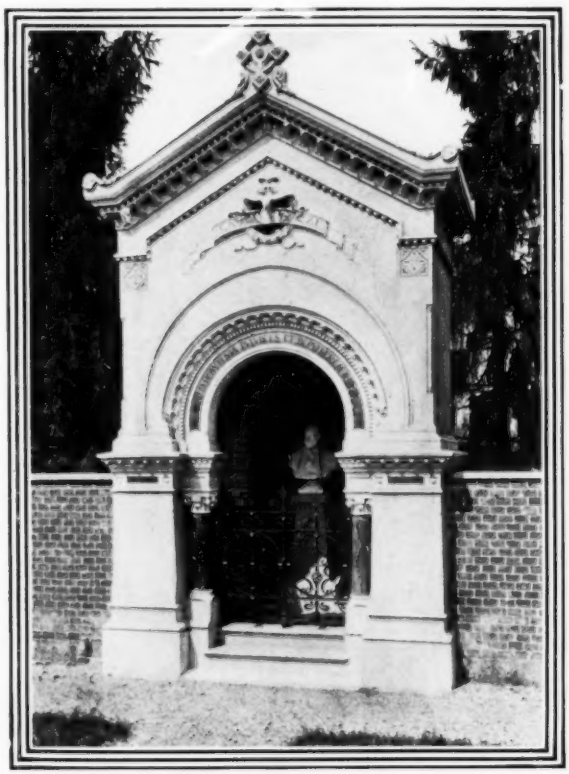
Bologna, Italy. Architect, M. Collamarini.

MONUMENT TO THE DEAD.
Milan, Italy. Sculptor, T. Pogliani.

I said above that the problem of the preservation of our monuments and of their restoration was studied in all its forms; this might be taken to mean that the department which has charge of this problem is regular, well organized, deserving of praise. Yes, it is, from the theoretical point of view; but in the field of practice it is wise to say so with the greatest reservation.

For this department the Peninsula has been divided into ten regions; every region must take care of the monuments in the cities and boroughs scattered over a very considerable surface. Thus, for instance, the Venice regior (Veneto) embraces the cities of Belluno, Padua, Rovigo, Treviso, Udine, Venice, Verona, Vicenza

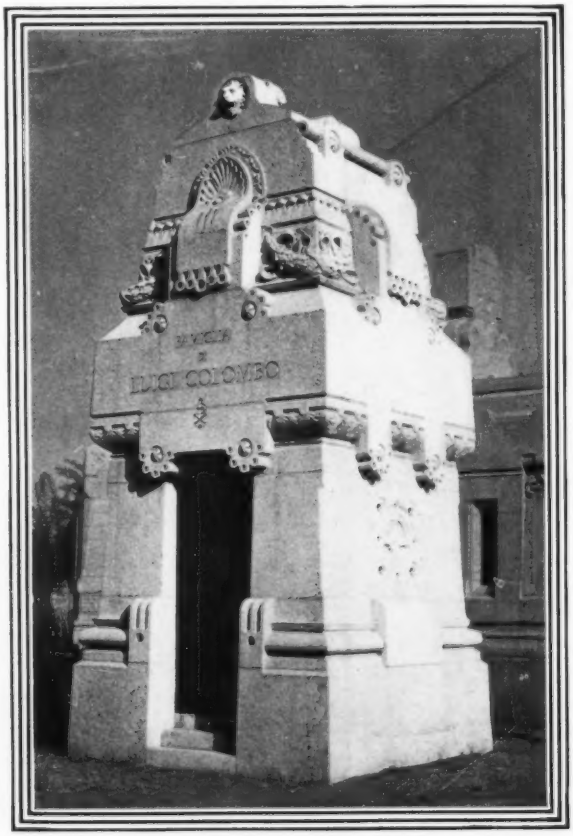
and surrounding boroughs; the region of the Meridional Provinces, which is the most extensive one, embraces the cities of Avellino, Bari, Benevento, Campobasso, Caserta, Catanzaro, Cosenza, Foggia, Lecce, Naples, Potenza, Reggio Calabria, Salerno and surrounding boroughs. Every region has its special office, with a director, architects, subalterns, and a budget for itself, moderate in proportion to the necessities of the region, but sufficient to maintain the appearance of a regular and well organized ad-



CHAPEL AND TOMB OF CARLO POZZI.
Milan, Italy. Architect, M. Locati.

ministration. As soon as these offices start to execute a project which they have elaborated, they do not preserve generally by strengthening the monuments, but they recompose them, complete them. In this manner many of our buildings have been made over in ancient style, but with what regard for the authority of history you can imagine yourselves. To say the truth, the laws which regulate this matter forbid recomposing and provide for strengthening or consolidating; but, as l'appetit vient en mangeant (as your

appetite comes while you are eating), we Italians have frequently occasion to see monuments, the original structure of which is altered by modern additions in ancient style. Thus Italy presents to the stranger who comes to visit her a quantity of castles, for instance, which are veritable mystifications and monumental lies. There was formerly prevalent among us the habit of reducing to a uniform style a monument which in the course of time had received forms in a

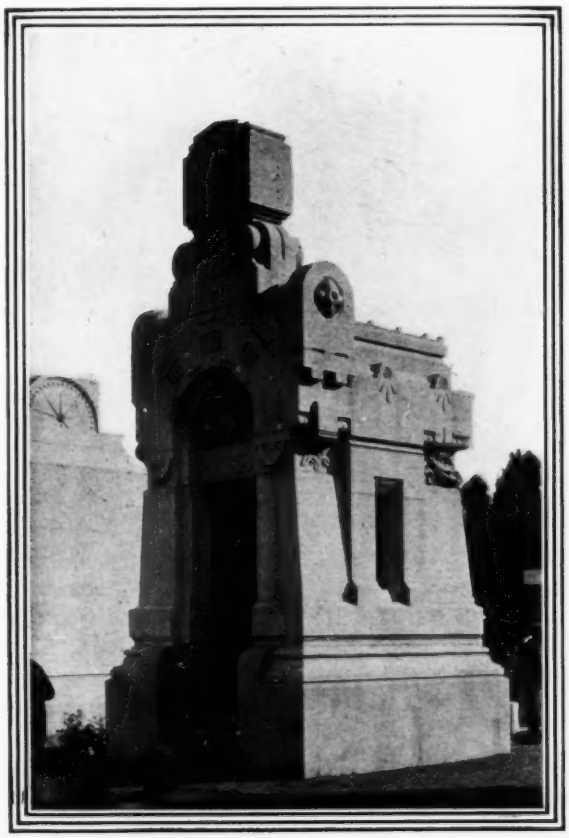


CHAPEL AND TOMB TO LUIGI COLOMBO.
Milan, Italy. Architect, De Boni.

style different from that of its primitive epoch; this led to arbitrary substitutions and produced architects who at the end of the nineteenth century worked in the style of the twelfth or the fourteenth century. I am referring to a period which lies seemingly far back, but alas, I must add that to-day these substitutions still occur, and that even the interference of the government has not the effect to check the hands of architects who follow this disgraceful system. I readily admit that exceptions must be made. There are,

however, monuments which have been treated in the irreverent manner which I have pointed out, and the system continues to make victims.

Before the creation of the monumental regions, with their respective offices, the preservation and restoration of the monuments was entrusted to the engineers of the Génie Civil; these not being architects, but professional men whose task was the maintenance



TOMB AND CHAPEL TO M. PINO.
Milan, Italy. Architect, De Boni.

of the public roads, bridges and water courses, dealt with the monuments according to the rules of geometry. Thus, where in the eyes of our engineers geometrical straightness was offended against, there our "conservatori" (?) must straighten out and reduce to perfect rectangularity corners, ensembles and cornices and columns, anything and everything that got into their hands. My excellent confrère, Mr. Goodyear, will be scandalized by this, but it is the truth.

STATUE OF VICTOR EMMANUEL I.

Venice, Italy. E. Ferrari, Sculptor.

One example is enough among an indefinite quantity. Everybody knows the Loggetta del Sansovino at Venice, particularly at present, after the destruction of the Campanile of San Marco, under whose ruins the graceful monument lies encumbered and frightfully damaged. Well, some years ago (the "Loggetta" was not altogether straight at that time) the engineers of the Génie Civil undertook to give this monument the position of a sword which enters its sheath, and since they could not straighten the arches and the pilasters, they straightened the projecting columns, shortening the mouldings of the upper entablature. You can imagine the atrocious effect. This operation occurred in one of the most artistic cities in Italy. Some time afterwards an effort was made to remedy the blunders of the Génie Civil, which has on its record several such stupidities. It was just on account of this amazing record that the government, under the pressure of artists, aesthetes, the professional press, decided to create the monumental regions with the bureaux of which I have spoken, and whose love for the antique goes so far as to wish to paralyze our country by the cult of everything representing a sentiment of the far-off times—a cult which, however, should not be transformed into a sort of superstition which shuts our eyes to all modern life. And we in Italy are at this point; we have the superstition, and this ought to change. So far as modern structures are concerned, our artists should possess greater courage and more originality; so far as the preservation and restoration of monuments is concerned, we should return to reasonable bounds, strengthen our historical documents written in stone; but we have good reason henceforth to rise against those who make additions to them or who reduce them to a uniform type, as if they were dead beauties.

Alfredo Melani.

Society of Beaux-Arts Architects.

September 2, 1903.

JUDGMENT OF JURY.

JURORS PRESENT—Messrs. W. A. Boring, E. L. Tilton, C. H. Aldrich, W. B. Chambers.

CLASS "A" PLAN PROBLEM.

A Chateau d'Eau.

Goodwin, S. L.	Atelier	Donn Barber	Hors Concours
Smith, L. E.	"	"	2d Mention

CLASS "A" ESQUISSE–ESQUISSE.

Entrance to a Private Garden.

Armstrong, W. T. L.	Atelier	Hornbostel	Mention
Smith, L. E.	"	Donn Barber	Mention

CLASS "B" PLAN PROBLEM.

A Country Inn.

Brazer, C. W.	Atelier	Perkins	1st Mention
Luckhurst, C. A.			2d Mention
Ogden, P. H.	"	Donn Barber	1st Mention

CLASS "B" ORDER PROBLEM.

A Park Pavilion.

Beck, W. G.	Atelier	Gay & Nash	Mention
Foley, J. J.	"	Donn Barber	Mention
Lubschez, B. J.	"	A. Van Brunt & Bro., Kansas City,	Mention

ARCHEOLOGY.

Goodwin, S. L.	Atelier	Donn Barber	Mention

LLOYD WARREN,
Chairman Committee on Education.

TECHNICAL DEPARTMENT.

A PART OF THE DISCUSSION ON THE PRESERVATION OF MATERIALS, TAKEN FROM THE TRANSACTIONS OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS.

Some six years ago, in compliance with a request from a former Superintendent of Buildings of New York City, the writer prepared a paper relative to the corrosion of metal in old bridges, and the chemical action which takes place between plastering materials and iron or steel when in contact.

The evidence given in that paper, parts of which are quoted below, was taken from papers and discussions before the American Society of Civil Engineers, and should be satisfactory and conclusive, as it represents the experience of some of the most distinguished members of this society. In addition, the results of some tests, conducted by the writer as to the corrosive effect of certain wall-plastering materials upon enclosed metals are given.

The Transactions of the American Society of Civil Engineers have been carefully examined in reference to this subject, and it is found from the Transactions that it is positively and absolutely established that iron and steel when embedded in cement mortar are not corroded if the cement mortar remains intact; that is, not cracked or broken to such an extent that the fissures become filled with water or subject to the action of the atmosphere.

The evidence is also positive and absolute that iron and steel are not corroded by lime mortar.

The following is quoted from the Transactions of the American Society of Civil Engineers.

"First.—The caustic alkalies and alkaline earths prevent the oxidation of iron by neutralizing the acids. Iron, therefore, does not corrode in alkaline solutions or when imbedded in lime."[1]

"Second.— I don't know that it has any very direct bearing upon this particular question, but it only occurred to me to mention that we have found cement to be a valuable protection for a ship against oxidation from bilge water. I have seen cases where these plates had been four or five years under the bilge water, when they were just as bright under the cement as when the ship was built. This has been the experience in the American and British navies, that cement applied to the surface of a plate in the bilge water under the engine-room and fire-room does protect it against oxidation."[2]

"Third.— All I can say is that we uncovered about four lengths of the anchor chains in the Niagara Bridge, and the pins and bars there were entirely free from rust. In one place the bars and chains had been painted, and in picking off the cement that had covered them quite a chunk would come off, and underneath they looked as bright as new. The bright end of a pin that had been filed 25 years before looked just as if it had been filed that day. * * *

The cement that Mr. Roebling used was Thorold cement. On the tops of the towers, the saddles and the cables lying in them were covered to a considerable depth with cement mortar, and when it was removed the wires were perfectly clean and bright. They are so still."[3]

And from the same paper:

"Fourth.—That the large anchor bars of the East River Bridge when placed in the masonry had all spaces filled with rich, pure cement grout made of Rosendale cement."[4]

Also from the same paper:

"Fifth.—In 1876, when the bridge over the Kentucky River was built for the crossing of the Cincinnati Southern Railway, several links of the anchorage of the Suspension Bridge which was partly built by Roebling at the same place in 1855 were dug out and were found in a perfect state of preservation, not a spot of rust being apparent on the bars; but the mortar in which they were imbedded was very compact and dry and of excellent quality."[5]

The following quotation is from the discussions on a recent paper entitled, "On Painting the Louisville and Jeffersonville Bridge."

"Sixth.—The problem of the covering of

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[1]Theodore Cooper, M. Am. Soc. C. E., Vol. XI., p. 425.

[2]H. S. Haines, M. Am. Soc. C. E., Vol. XXVIII., p. 366.

[3]L. L. Buck, M. Am. Soc. C. E., Vol. XXVIII., p. 367.

[4]F. Collingwood, M. Am. Soc. C. E., Vol. XXVIII,. p. 368.

[5]G. Bouscaren, M. Am. Soc. C. E., Vol. XXVIII., p. 370

iron with concrete or cement has probably been worked out more successfully in France than any other country. About a year ago the speaker made quite a study of concrete construction in buildings under several of the French systems, the Monier, the Melan, and others, and in every case the iron was covered directly with the cement, without paint or varnish or anything intervening."[6]

From the discussion on a paper entitled, 'The Protection from Corrosion of Iron Work used as Covering for Railroad Tunnels."

"Seventh.—The cement mortar, I suppose, really does preserve the iron from the effects of rusting. Not long ago I heard Mr. Robert Moore describe the method of treating bolts for bridges, by which, instead of using lead and sulphur, Portland cement was used, and it was found that the bolts were much better preserved in every way against rust and against pulling."[7]

"As to the adhesion of cement to iron it is well known that iron pipes coated with cement are laid down by the mile. These have been taken up in many places, but not because of lack of adhesion of the cement. I have taken up pipes that had been laid many years, knocked off the cement, and found the iron as bright as new. It occurs to me, therefore, that in the case treated of in this paper it would be well worth while to consider the propriety of applying the cement directly to the iron. The cement certainly preserves the iron from rust."[8]

The above record establishes the fact that cement mortar will protect iron and steel if the cement mortar is kept intact around the material.

Now, as to the lime mortar. All natural cements are made of limestone. Lime, such as used for building purposes and cement, contains exactly the same ingredients as cement, the only difference being that they vary in proportions of the ingredients, thus: The lime used for building purposes, plastering, etc., is composed of 90% of carbonate of lime and the remaining 10% of what is called impurities, such as silica (sand), alumina (clay), manganese, etc., and a limestone makes a slightly hydraulic or eminently hydraulic cement, according to the variations of the proportions of the impurities, thus: The eminently hydraulic cements contain about 65% of carbonate of lime and 35% of the impurities, such as silica, aluminum, etc. I established by quotations from the above Transactions that the ingredients in cement mortar do not cause corrosion; therefore, the same ingredients in lime mortar will not cause corrosion, as exactly the same materials are used in both cement and lime mortar, as both the cement and lime are mixed with sand to make mortar.

In support of this argument the following practical experience is submitted During the construction of the extension of the Sixth Avenue Elevated Railroad, Phoenix iron columns were used. These are closed columns, and are inaccessible to painting after being erected, and this has always been a serious objection to the use of the Phoenix column. In order to overcome this inability to paint the interior of these columns, and to protect the interior from corrosion, the columns, especially around the "S" curve from One Hundred and Tenth to One Hundred and Fourteenth Streets were filled with ordinary lime mortar to prevent them from corroding on the interior surfaces. Mr. Edward Wegmann, now Division Engineer of the Croton Aqueduct, with headquarters at Katonah, New York, was the engineer in charge of this work.

Second.—Mr. Prince, of the firm of Prince & Kinkel, Ironworkers and Contractors, of this city, says that he has taken down ironwork which had been erected over 25 years and which was covered directly with ordinary lime mortar and the ironwork was as bright as when first erected, and entirely free from corrosion.

Third.—The statement of Mr. Theodore Cooper has been quoted above.

"The caustic alkalies and alkaline earths prevent the oxidation of iron by neutralizing the acids. Iron, therefore, does not corrode in alkaline solutions or when imbedded in lime."

Fourth.—William H. Burr, M. Am. Soc. C. E., Consulting Engineer, * * * * formerly Engineer of Construction, and later the General Manager of the Phoenix Bridge Company, of Pheonixville, Pa., * * * made a report as to the result of competitive tests made at the Bowling Green Building in August, 1896, on the Roebling wire partition. Lime plastering mortar, gauged with Atlas Portland cement, was used. Mr. Burr says in his report: "The net-work was thoroughly imbedded in the scratch coat, and I could discover no sensible corrosion of the wires."

[6] R. W. Lesley, Assoc. Am. Soc. C. E., Vol. XXXIX., p. 33.

[7] Desmond FitzGerald, M. Am. Soc. C. E., Vol. XXVII., p. 330.

[8] J. P. Frizell, M. Am. Soc. C. E., Vol. XXVII., p 330.

To quote again from a report made by Mr. A. J. Robinson, of the well-known firm of Robinson & Wallace, Builders, of this city, being a report of the abovementioned competitive test done on the Roebling wire partition: "I found no rust on the wire from lime-gauged machine mortar."

In the report made by Mr. Isaac E. Ditmars, Architect, of the well-known firm of Shickel & Ditmars, Architects, on the competitive test at the Bowling Green Building, Mr. Ditmars says as follows: "That I found the lime plastering mortar gauged with Portland cement did not appear to rust the wire."

Returning again to the Transactions of the American Society of Civil Engineers, we find in the paper on the "Restoration of the Cable Ends of the Covington & Cincinnati Suspension Bridge," when the cables were removed, Mr. Bouscaren, Engineer-in-Charge, reports that the mortar in immediate contact with the wires was impregnated with iron rust, and formed a very hard crust around the strands.

"The outside wires of the strands were, as a rule, bonded together in a matrix of rust, giving to the strands the appearance of solid bars, yet in a few spots the wires were bright and well preserved.'

Mr. Bouscaren gives this description of the character of the masonry:

"The character of the masonry was poor, the vertical joints and beds between the dimension stones of the casing were very irregular in thickness and imperfectly filled with mortar; numerous cavities were found in the rubble filling, which in the case of the northwest wall were of sufficient size to admit freely the full length of a man's arm. The mortar was very irregular in quality and showed great variation in the proportions of sand and lime used with the cement; as a rule, it was defective in hardness and saturated with moisture, especially in the immediate neighborhood of the cable strands, which had been bedded and grouted in the rubble. Quite a number of wooden chips and wedges were found imbedded in the mortar and reduced to the consistency of a soft pulp by the united action of air and water; in the case of the northwest abutment, a piece of yellow pine scantling over 4 ft. long was found in the mortar between the strands."

In the discussion of this statement of Mr. Bouscaren, Mr. Theodore Cooper said as follows:

"As far as this case goes, the faith of Mr. Roebling and other engineers in the preservative effects of cement mortar need not be shaken, for, from the author's description of the masonry, and the wooden blocks and chips imbedded therein, the cables were not imbedded in cement mortar."

And, also, that "the conditions necessary to preserve iron from corrosion, as we understand them, are total exclusion of acid substance, or any material which may, by its own changes, produce any acid action."

"That percolating through cement has any acids contained therein neutralized is the natural explanation of the preservative character of cement mortar. If, however, the cement covering be imperfect, so that any water can pass without this neutralizing of the acids, oxidation must be expected."

In the same discussion, Mr. Whinery said:

"Mr. President, I have imagined that the effect of mortar upon iron depended somewhat upon the constituents of the cement. Cement that contains a very small amount of, or, no, sulphur, would, I imagine, protect the iron pretty thoroughly. But I think a small percentage of sulphur, which all our natural cements contain, might account for the corrosive action of the cement to a great extent."

The simplest proof that lime mortar and lime mortar gauged with cement does not corrode iron or steel is the fact that the operative plasterers leave their steel tools in lime mortar and in the lime mortar gauged with cement over night and for many consecutive hours, and on taking out the tools they find they are not rusted.

Having now discussed the corrosive effects of lime mortar and cement mortar upon iron and steel, we come to the discussion of the patent plasters, or so-called hard plasters. In a recent circular issued by one of the patent plaster companies, July, 1897, we find the following: "Our method of manufacture renders the patent plaster the only material that does not corrode iron, metal lath or nail heads." We will now see if this statement is correct. In August, 1896, a competitive test was made in the Bowling Green Building, Nos. 5-11 Broadway, between lime mortar gauged with Atlas Portland cement, and the patent plaster, done on the Roebling wire partition. Mr. William H. Burr * * * made a report as to the results, from which the following is quoted:

"I found that the patent plaster had induced active and serious corrosion of the wire holding it in all the numerous instances where I had opportunity to observe this effect. In all these examina-

tions I found the patent plaster materially inferior in respect to qualities of hardness and tenacity, and lacking monolithic character, as well as possessing some quality which induces active corrision of the wire partition. This latter effect might produce a serious result, in some instances at least, in a comparatively short time.

The results of this examination exhibit the superior excellences of Portland cement as an agent for giving strength and hardness to wall plaster, and it possesses the additional valuable quality of preserving the wire partition against corrosion, whereas, some element in the patent plaster actively induces it.

Mr. Burr stated that he could discover no sensible corrosion of the wires from cement gauged lime mortar.

In the report of Mr. A. J. Robinson, on the competitive test on the Roebling wire partition, he states: "I found, where I could observe it, that the wire was badly corroded where the patent plaster had been used."

The principal cementing material of the patent plasters, or so-called hard plasters, is 'gypsum' or 'Plaster of Paris,' known in chemistry as 'sulphate of lime,' and according to a recent authority* its chemical analysis shows acid, 46 parts; lime, 32 parts; water, 22 parts.

In the discussion on the Care and Maintenance of Bridges, Mr. Theodore Cooper states as follows:

"Ordinary commercial sulphur generally contains sulphuric and sulphurous acids, produced by the oxidation of the sulphur during its process of sublimation. These acids are the immediate corroding agents when the impure sulphur and iron are in contact."

In general the rusting or corrosion of iron only takes place in the presence of an acid and moisture.

In dry air at common temperatures, or under pure water free from air and carbonic acid, iron does not oxidize. Neither does it oxide in dry carbonic acid gas; nor to any great extent, if at all, in damp oxygen. But in the presence of moisture and many acids the corrosion takes place readily and continuously.'

Thus, according to this authority, in the 'presence of moisture and many acids the corrosion takes place readily and continuously.' The patent plasters contain both the moisture and the acids necessary to start the corrosion.

One of the claims of the various patent plasters is that by the use of their material the plastering of a building can be done so much quicker from the fact that their mortar becomes hard, or 'sets,' in a few hours, and in many cases the white coat is applied the following day. Although the patent plasters 'set' and become hard, tney are not dried out, because it requires just as much water to put the patent plasters in a plastic condition ready to be applied to the iron lath or wire as it does to make lime mortar in the same condition, and it is the universal custom to allow the lime mortar to dry out thoroughly or become 'bone dry.' Thus, at the time the lime mortar is coated with the white coat the lime mortar is in contact with the metal lath or iron wire, the lime mortar is dry. On the contrary, the water in the patent plasters is not dried out and there is a moisture or water in the patent plaster in combination with the 'sulphate of lime' and other acids used in the preparation of the patent plasters.

In the patent papers of one patent plaster company it is stated that both sulphuric and muriatic acids are used in the composition of this plaster. * * * The simplest proof that patent plasters corrode iron and steel is the fact that the operative plasterers find that when they leave their steel tools in the patent plasters over night they are found to be corroded the next morning.

Mr. W. B. Corney, of the firm of W. B. Corney & Brother, Plasterers, says that he had repaired a ceiling of a building situated on Sixth Avenue, New York, at about Thirtieth Street, and found that the metal lath was entirely corroded and gone, and there was nothing but a shell of plaster composing the ceiling. He further stated that the plaster was a 'patent plaster,' but did not know which one. * * *

A test was recently made at the new addition of the Metropolitan Life Insurance Company's Building on Twenty-third Street, New York City, to determine the corrosive effect of plastering materials upon metals.

Pieces of cast iron were broken, and a plastering material consisting of lime mortar and Portland cement was applied to the clean, bright fracture of one piece; and a sample of patent plaster was applied to the clean bright fracture of another piece.

About a month after, the two samples of plastering material were removed, and the piece of cast iron to which the cement-gauged lime mortar had been applied was as clean and bright as when first broken; but the second piece of cast iron, which had been covered with the patent plaster, was corroded.

W. W. KENLY, Am. Soc. C. E.

*Millar.—"Plain and Decorative Plastering."